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OVERSIGHT VISIT TO THE FAR EAST

REPORT

TO THE

COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY U.S. HOUSE OF REPRESENTATIVES

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* Ranking Republican Member

LETTER OF TRANSMITTAL

U.S. HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY,
Washington, DC, October 3, 1989.

To All Members, Committee on Science, Space, and Technology:

I hereby transmit this oversight review of science and technology programs and policies in East Asian countries visited during the period August 5 through August 15, 1989.

The review included a series of policy meetings with key science and technology officials in both Thailand and Korea. Globalization of the world economy and increased reliance on science and technology to promote economic growth have become pervasive influences in our changing relationships with other nations. Both Korea and Thailand have ongoing science and technology agreements with the United States, and each nation's use of science and technology to promote development is reflective of the new economic and technological forces that are solidifying in East Asia.

In addition a series of meetings were held in Hong Kong with British Government officials, Hong Kong Government officials, and U.S. State Department personnel from both Hong Kong and Beijing. These meetings focussed on the tenuous position of Hong Kong in the wake of the recent turmoil in China and on Hong Kong's projected transfer in 1997 from British Crown Colony to Special Administrative Region of the People's Republic of China.

A detailed documentation of all meetings appears herein for Members' review and consideration.

Sincerely,

ROBERT A. ROE, *Chairman.*

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MEETING: Japan Country Team Briefing
Tokyo, Japan

DATE: August 6, 1989

KEY OFFICIALS: L. Desaix Anderson
Deputy Chief of Mission, U.S. Embassy
Tokyo, Japan

Richard Getzinger
Counselor for Scientific and Technological Affairs
U.S. Embassy, Tokyo, Japan

BACKGROUND AND DISCUSSION:

The CODEL met with Mr. Anderson, Deputy Chief of Mission, and Mr. Getzinger, Science and Technology Counselor, during a refueling stop at Yokota Air Force Base outside of Tokyo.

The purpose of the meeting was to brief Members of the CODEL on the political situation in Japan at the moment and to review the components of the U.S.-Japan science and technology relationship.

We arrived in the midst of major political turmoil in Japan and on the eve of Japan's ruling Liberal Democratic Party caucus to choose a new president to succeed the outgoing Prime Minister Sousuke Uno.

The frontrunner in the pack of three aspirants for the position was Toshiki Kaifu, former education minister. The caucus choice was virtually certain to be chosen Prime Minister the next day by the lower house of the Diet where the Liberal Democratic Party holds a 38 seat majority.

Selection of a new leader for the LDP is viewed as crucial in the wake of the Party's first ever defeat in the upper house election held on July 23. A nation-wide election for the lower house must be held by next July. It is this lower house that holds the power to elect the Prime Minister.

All three aspirants were on record as opposed to any opening of Japan's rice market to imports.

Another important issue is the recently imposed 3% consumption tax which is particularly unpopular among Japanese women who are currently emerging as a political force and who are the primary purchasers of consumer goods.

Mr. Anderson suggested that, because of the recent political instabilities and the need for coalition consensus in the government, the emerging government can be expected to be basically ineffective for the next 18-24 months.

Comment was made that it is fortunate that the Japanese signed the Space Station Freedom Agreement before the Diet adjourned for elections, suggesting that it would have been more difficult to accomplish with the new government.

Science and technology cooperation between the U.S. and Japan was formally initiated in the early 1960's and has been actively pursued for over 25 years. At the present time, over a dozen bilateral S&T agreements are in force, covering such diverse fields as space, medical research, the environment, energy, basic sciences, transportation, and natural resources. Regular bilateral meetings held in connection with these agreements have resulted in numerous mutually beneficial technology exchanges and the creation of lasting friendships between researchers and science administrators in both countries.

Over this same period, the level of Japan's science and technology has risen steadily, and now equals or exceeds world-class standards in many fields. Japan now spends 2.8 percent of its GNP, or about $62 billion, on research and development (comparable figures for the U.S. are 2.7 percent of GNP and $119 billion). In Japan, the private sector provides the largest component of total R&D funding, approximately 69 percent, while in the U.S. the private sector and the government each provide approximately 50 percent of total funding.

Japan's emergence as an economic super-power, with accompanying large and persistent trade surpluses with the U.S. and other developed countries, has led to demands for an end to Japan's "free ride" in science and technology. Japan has been urged to open its laboratories to researchers from other countries, to accept more rigid standards for protection of intellectual property rights (IPR), and to focus more of its resources on basic, rather than developmental, research.

Each of these issues was addressed during the sometimes contentious negotiations leading to the new umbrella U.S.-Japan Science and Technology Cooperation Agreement, signed by President Reagan and Prime Minister Takeshita in June 1988. The two governments have now agreed to work toward an equitable balance in the flow of researchers and technical information between the U.S. and Japan, to undertake joint research projects in cutting edge technologies for the future, and to give appropriate protection to IPR and national security concerns.

Implementation of this new agreement was initiated by a ministerial-level meeting, involving White House Science Advisor Graham and Japanese Science and Technology Minister Itoh, in Tokyo last October. Since then, follow-up joint advisory and planning groups have been working to improve access to Japanese technology and to establish the first specific new cooperative projects in the areas of superconductivity, the global environment, computer-aided translation, and robotics.

Japan, at the urging of the U.S. and other Western countries, has also taken steps on its own to meet the twin goals of improving access to its technology and funding more basic research. As examples, three Japanese ministries, the Science and Technology Agency, the Education Ministry, and the Foreign Ministry, are now offering fully paid science fellowships to Western researchers who want to work in Japanese government and university laboratories. Over 70 Americans are participating in this program. Western researchers can now also participate in Japanese government-industry cooperative research programs such as MITI's Large-Scale and Future Industries projects, and the new MITI International Superconductivity Center (ISTEC). In the area of basic research, Japan has initiated, and will provide most of the early funding for, the Human Frontiers Science Program, involving the Economic Summit countries, and with its headquarters in Strasbourg, France.

Two of the Japanese government's largest ongoing R&D programs are in the areas of space development and nuclear energy. In the first of these, Japan is moving ahead steadily toward "indigenous" development of its own next-generation H-II rocket (first launch delayed one year to 1993). Internationally, Japanese payload specialists are training for a 1991 flight aboard the Space Shuttle, and Japan is an enthusiastic partner in the NASA Space Station Freedom project. The recent approval by the Japanese Diet of the Space Station Intergovernmental Agreement was a critical step in assuring full funding for the Japanese Experimental Module.

Japan's commitment to nuclear energy remains firm despite indications that the level of public opposition to nuclear power is growing. Japan's nuclear program is the fourth largest in the world, and long-term plans include reprocessing and deployment of breeder reactors. The 1987 U.S.-Japan Nuclear Energy Agreement should ensure that bilateral cooperation in this important field continues for many years into the future.

Japanese interest in future applications of high temperature superconductivity (HTS) continues unabated. Government R&D funding for the current fiscal year is up 24 percent over JFY 88 to nearly $80 million. Japanese companies are concentrating on overcoming barriers to practical use of established HTS materials, including especially YBC.

Japan is becoming an increasingly active supporter of international efforts to deal with global environmental issues. With respect to ozone layer depletion, Japan is fully committed to a total phase-out of CFC production and use by the year 2000. Japanese companies are actively pursuing research on CFC substitutes. Japan is also actively participating in the international effort (through UNEP/IPCC) to deal with the global warming problem.

Japan remains a cautious but interested observer of international initiatives to construct "big science" facilities in fusion (ITER) and high energy physics (SSC). A final Japanese decision regarding participation in the SSC project is unlikely before construction funds are appropriated in the U.S.

MEETING: Country Team Briefing
U.S. Embassy
Seoul, Korea

DATE: August 7, 1989

KEY OFFICIALS: Thomas Stanley Brooks
Deputy Chief of Mission

Charles Kartman
Political Counselor

Kevin J. McGuire
Economic Counselor

Kenneth D. Cohen
Science Counselor

George J. Pope
Agricultural Counselor

David Surh
Drug Enforcement Administration Official

BACKGROUND AND DISCUSSION:

Consul General Tom Brooks warmly welcomed the CODEL to Korea, introduced his colleagues from the American Embassy, and gave a brief summary of Korea's political status. Mr. Brooks began by observing that Korea is still in a state of war -- that is, despite the Armistice Agreement of 1953, the Korean war is not officially over. North Korea continues to maintain one million armed troops (compared to South Korea's 650,000), to spend 15-20% or more of their GNP on defense (compared to South Korea's 5% of GNP), and to continue efforts to divide and weaken the U.S./South Korea relationship. Mr. Brooks warned that the conflict between South and North Korea should not be forgotten as we consider South Korea's economic, science and technology, and defense situations.

In recent years, ROK students have held demonstrations in favor of the unification of North and South Korea. The Republic of Korea (ROK) allows a very free press, and students have used this medium in efforts to sell unification to the public. In addition, clandestine visits of ROK students to North Korea have occurred, and although sobering, these visits have not moved ROK towards unification. Many ROK citizens besides the student demonstrators believe that unification would bring security, stability, and prosperity for all the citizens of Korea. However, they do not favor unification on Kim Il Sung's terms -- that is, under communism.

South Korea's GNP has risen 12% annually since 1970. The real GNP growth for 1989 is estimated at 7-8%, with the slowdown due to labor-management disputes, high inflation (1988=7.1%), and increased expenditures for rural developments and environmental services.

Mr. Kevin McGuire, the Economic Counselor, stated that the South Korean government's attitudes have changed dramatically regarding opening some closed markets such as insurance, beef, and cigarettes to U.S. exporters. The current government has made an effort to explain and justify to the public the need to open markets to the U.S.

Cong. McCurdy inquired into the type and quality of R&D in South Korea in relation to continuing problems with Intellectual Property Rights. Korea has signed an international convention on IPR, but laws are not in place to fully implement it. Change is difficult due to the deep-rooted cultural belief that it is not a crime to steal knowledge and

to the lack of an enforcement agency to implement these restrictions. The agencies responsible for enforcement will be the Ministry of Trade and Industry for software and related copyrights, the Ministry of Culture and Information for books, phonographs, and films, and the Patent Office for all other areas. The U.S. Trade Representative's office has put Korea on their High Priority Watch List for not meeting Sec. 301 requirements.

Cong. McCurdy stated his understanding that the U.S. military is communicating with Korea on military strategy for the peninsula. He was told that Korean generals are convinced that U.S. troops will pull out of the peninsula within five years, and though ROK is working hard to modernize their forces, they still depend heavily on the U.S. for intelligence-gathering and for almost all of their military aircraft. ROK is currently building much of their own army equipment and will be shortly signing a co-production agreement to build either the F-A18 fighter aircraft with McDonnell Douglas or the F-16 with General Dynamics.

North Korea has an advantage over ROK in numbers of aircraft and tanks, although the quality of ROK arms is superior, in large measure because of U.S. contributions.

Cong. Hughes inquired whether South Korea was considering increasing the size of their armed services. Embassy staff indicated that they would probably not, since the current force is considered by ROK and the U.S. to be sufficient.

Cong. McCurdy asked if the 40,000 U.S. troops currently in Korea really make a substantial impact on Korean security. The value of the U.S. presence is due to the deterrence value of the U.S. forces, the high quality of U.S. modern weapons, heavier artillery, better logistics, and critical early warning intelligence capability.

Regardless of the ongoing policy discussions regarding gradual phase-out of U.S. military presence in South Korea, the U.S. position remains that U.S. troops will remain in Korea as long as the ROK government feels our presence is necessary for national security.

Chairman Roe stated the concern of many that EC92 might freeze out the U.S. and possibly some Asian countries from the European market. In anticipation of this, should the U.S. and Asian countries attempt to coordinate their efforts? Mr. Brooks responded that there is much potential for greater pan-Asian cooperation, but that the newly industrialized countries of Asia will continue to look to the U.S. He added that the U.S. approach of trying to keep national security and commercialization separate might not foster this type of cooperation. He pointed to the U.S./Japan FSX fighter aircraft deal as a clear case of mingling defense and commercialization.

MEETING: Ministry of Foreign Affairs
Seoul, South Korea

DATE: August 7, 1989

KEY OFFICIALS: Shin, Dong-Won
Acting Minister of Foreign Affairs

Chun, Soon-Kyu
Director General
International Economic Affairs Bureau

Ahn, Hyo Seung
Director
Science, Technology & Resources Division

Kim, Young Seok
Assistant Director
Security Division

BACKGROUND:

As an emerging world power, at least in an economic and technological sense, the Republic of Korea is involved in broad and complex issues of foreign affairs. However, two major items dominate Korean extra-territorial activities.

First is their interaction with North Korea. The divided nation, produced by the power struggles that followed World War II, is beset by an identity crisis. For complex sociological reasons, there is a strong national urge for unification in South Korea, despite the communistic dictatorship and closed society of North Korea. The presence of the 40,000 American troops is the mixed blessing with which South Koreans live.

The military might of North Korea is such that the Republic of Korea would be quickly engulfed by the Communists from the north if American troops were to be withdrawn. At the same time, many South Koreans regard the U.S. troops as an army of occupation. Under the best circumstances, any nation tends to chafe when foreign troops are stationed on its soil.

The second dominant facet of Korean foreign affairs clearly relates to South Korea's emergence as a major economic force, which is due in part to restrictive trade practices. Korea has exerted tight control over foreign investments, imposed harsh strictures on foreign firms, protected its agriculture, and been cavalier about intellectual property rights.

This has long been a bone of contention but the situation is exacerbated as Korean economic power grows. The United States is Korea's most important trading partner. Nearly a third of South Korean exports are purchased by the U.S. and more than a third of South Korean imports comes from the U.S. The net dollar impact of this commerce is that in 1988 the U.S. had a deficit balance of trade with South Korea of $9.5 billion.

At the present time this negative balance of trade seems to be declining and the value of Korean currency, the won, continues to appreciate. Various agreements on restrictive trade practices are being reached, and there is optimism that mutually satisfactory policies can be formulated.

DISCUSSION:

The meeting was opened by Mr. D. W. Shin, the acting Minister of Foreign Affairs, who introduced his colleagues. Mr. Shin extended a warm welcome to the visiting delegation, recognising the mutual interests of the two nations being represented at this meeting. He acknowledged that there were several issues still open between the two countries, particularly some involving trade and commerce. However, he believed that the issues were resolvable and could be settled amicably with continued effort by both sides. Mr. Shin said he was especially pleased with the cooperation that existed in the science and technology area. He hoped it would be maintained and that it would be even closer in the future. He saw the CODEL visit as contributing to cooperation, and he urged the Members to see as much of Korea as possible and to meet the Korean people.

Mr. Shin responded by saying that he understood the concern. The problems of citrus and beef have been particularly vexing. The government had been trying to deal constructively with the farmers, but the problems could not be settled overnight. However, there had been progress. In 1985 the quota for U.S. beef was 1,000 tons; this year the quota was 10,000 tons. The quota is now being increased to 50,000 tons. Other negotiations were proceeding to remove further restrictive measures.

Mr. Shin went on to say that while he could not give a 100% satisfactory anawer at the moment, he was personally convinced that a policy satisfactory to the U.S. could be achieved. However, he went on to say that the Members should be aware that complaints from Korean farmers were growing. The development of the agricultural sector lags behind the progress shown in other areas of Korea's economy, and the farmers feel they need help. Agriculture is so historical, so traditional, and so basic that farmers cannot abandon old practices and attitudes. As a consequence of the social and emotional dimension, normal economic theory is not totally applicable.

Mr. McCurdy pointed out that his district also produced beef and he had to have an explanation for his constituents as to why their young men should be involved in protecting Korea's liberties when Korea would not let Oklahoma farmers sell their products to Koreans.

Mr. Shin reiterated his views that matters would improved. He stated that Korea was currently the tenth ranking trading partner of the United States and hoped to gradually improve that position.

Mr. Packard expressed his pleasure at having the opportunity to visit Korea and hoped that our visit would contribute to increased understanding and cooperation. Mr. Hughes stated his concerns about the intellectual property issue and emphasized particularly the necessity of preventing trademark violations.

Mr. Shin's reply reiterated his point that Korea was trying hard. He said that the formal, official rules now in effect were as stringent and definitive as the American rules. The difficulty was that the responsibility was distributed among the various ministries and agencies. At a time of fast changing social conditions, implementation and policing was extremely difficult. The previous authoritarian government would have had less trouble, at least in dealing with this particular problem.

Mr. Packard raised the question of the Korean attitude toward the U.S. military. Mr. Shin's reply was that it is obvious that the radicals oppose the U.S. presence. On the other hand, the majority is well aware of the importance of the U.S. in monitoring peace and security not only in Korea, but also in all of Asia. Most people have become aware of the undesirability of reunification if it involves, as apparently it would, the communization of the nation. Further, the American presence has encouraged democratization and it has also helped Korean economic progress. Certainly careful consideration of pre- conditions and circumstances should enter into any decision on troop reduction. Troop reduction is a subtle and sensitive topic where one must be concerned with the repercussions of any actions taken. Above

all it is important not to encourage military adventurism on the part of the North Koreans.

Mr. Roe ended the discussion by reiterating his support for continued American-South Korean cooperation and scientific interaction. To that end he suggested that, as with the Japanese, we have a quasi-formal arrangement for holding joint annual legislative visits, the site of the meeting alternating between Washington and Seoul. Mr. Shin gave a very positive response to the concept.

MEETING: Ministry of Science and Technology
Seoul, South Korea

DATE: August 7, 1989

KEY OFFICIALS: Choe, Young Hwan
Acting Vice Minister of Science and Technology

Seung, Duk Park, Ph.D.
Assistant Minister
Technology Policy and Development Office

Bak, Kwang Kang, Ph.D.
Assistant Minister
R&D Policy and Coordination Office

Soon-Jong, Hwang
Director
Division of International Cooperation

Jae Hee Hong
Life Science and Ocean Research Coordinator
Ministry of Science and Technology

Hee Yol Yu
Director General for Policy Planning

Oh-Kab Known
Director
Technology Transfer Division

BACKGROUND:

Korea has a long history of science and technology, which accounts in part for the rapid leap in science and technology that Korea has made in recent years. Centuries before Gutenberg, Koreans were using movable type and publishing books on astronomy, geography, medicine, and agriculture. Many of the early incursions of Korea by the Japanese were motivated by attempts to obtain technology transfer the old-fashioned way.

In the aftermath of World War II, as the U.S. strove to make Korea a bulwark against communism, we helped to build up the Korean scientific, educational, and industrial base. The inevitable result was that the Koreans quickly developed into formidable economic competitors. In many respects, the Koreans still see themselves as an underprivileged third world nation needing special concessions in terms of patent rights, taxation, and tariffs.

On the other hand, the U.S. sees itself as a nation suffering from a disquieting negative balance of trade. We fear that we are undergoing an erosion of our economic strength and our manufacturing capacity as Korea and other Pacific Rim nations produce many goods that are better and cheaper than ours.

The economic situation relates to developments in science and technology. The U.S. and the various U.S. agencies have 16 S&T agreements with Korea, only one of which apparently involves U.S. expenditures. The exception is an NSF grant of $267,000. The bulk of the agreements involves technical cooperation, consultation, information exchange, etc. The major S&T Umbrella Agreement, which went into effect in May 1976, expired in October 1988. A new agreement is being negotiated in accord with the Omnibus Trade and Competitiveness Act.

DISCUSSION:

Acting Vice Minister Y. H. Choe opened the meeting with a statement of welcome. He noted that while there has been formal mutual negotiation between the U.S. and Korea for over a century, this meeting with the delegation was of historic significance in that it indicated the existence of a mature partnership. It also had significance in that it was part of the total world peace picture since there could be no peace without peace in Korea.

Acting Vice Minister Choe went on to state that Korea's economic progress was threatened by "the three highs" -- high wages, high value of the won, and high cost of manufacturing technology. Scientific and technological research and development constitute the appropriate way of confronting the three highs. The Korean Government is taking concerted action particularly to deal with the fact that engineers and scientists are in short supply. However, Korea needs increased U.S. cooperation. The current mutual dependence should be deepened, recognizing that the U.S. will remain the world leader. In particular, Mr. Choe asked for the Committee's help in bringing the prospective S&T umbrella agreement to fruition.

The next speaker was Assistant Minister Seung. He stated that science and technology were central to Korea's economic development. A policy for science and technology cannot be formulated out of context. Korean S&T policy will emphasize creativity not imitation. To give substance to the policy, the Korean Government has committed itself as follows:

(1) The government will continuously pursue a technology-led policy which allows science and technology to play a leading role in promoting socio-economic development. For this, available resources are to be allocated for the promotion of science in a preferential manner by enhancing the social environment for science and technology.

(2) The government has placed special emphasis on the securing and nurturing of cadres of creative scientists and high caliber technological manpower in order to meet the rapidly increasing demand for R&D, both in the public and private sectors.

As of 1987, the total number of qualified scientists and engineers stood at 54,000, representing 13 persons per 10,000 population, showing that Korea is still short of high-caliber manpower. To alleviate this shortage, the government, together with the private sector, will pursue the realization of effective training in science and technology-related fields in higher education.

In accordance with the long-term forecasting of high-level scientific and technological manpower requirements, Korea will secure a total of 150,000 scientists and engineers, or 30 persons per 10,000 population, by the year 2001.

(3) The government has drastically increased R&D investment, recording remarkable achievements since 1980. The budget for science and technology has been increased by about 15% annually over the past six years, while public enterprises, including telecommunications and electrical power companies, are encouraged to set aside a sizable portion of their income for technology development.

Along with this, the private sector has also rapidly augmented its R&D investment by about 60% annually, helped in large part by various government incentive programs. As a result, the total amount of R&D expenditures jumped from $577 million in 1981, or 0.9% of GNP, to $1.8 billion in 1986, or 1.99% of GNP. Korea has set the goal of boosting R&D investment to 3% of GNP in 1991, and to over 5% in the year 2001. The Korean Government is determined to achieve this target.

(4) The Korean Government has undertaken national R&D projects since 1982, which normally could not be pursued by industry alone, to develop key industrial technology. The criteria for selecting national projects include their technology intensiveness, international comparative advantage, conservation of energy and resources, growth potential, and contribution to social development.

(5) In order to effectively utilize R&D resources, which are not sufficient in absolute scale, and to push ahead with policies systematically, the Korean Government redefined the roles among government-supported R&D institutes, universities, and private enterprise in carrying out R&D activities.

The R&D capability of universities and private enterprise was nominal in the 1960's, with most R&D activities being implemented by government-supported activities. This has been changed drastically, particularly in the 1980's. Private businesses have set up their own in-house R&D facilities, greatly enhancing R&D capability, while universities have also upgraded their R&D capacity by allocating more expenditures for R&D.

In line with this trend, universities pursue basic science, while private institutes undertake R&D for commercialization. Government-supported institutes play the role of a bridge linking universities and private institutes, and are also responsible for the areas which private institutes cannot afford, due to heavy financial burden and high risk.

(6) In order to foster the industrial technology development, the Korean Government provides various incentives to private enterprise, which must play the leading role in the process of industrial technology development in a free market economy.

In the case of proprietary technology, the government makes available indirect incentives to the private sector under the principle of competition. Meanwhile, as for generic technology, the government extends direct as well as indirect support for the private and public sectors under the principle of cooperation.

Following these two basic principles, the government recommends that large-scale companies establish at least one research center per company, while small and medium companies are encouraged to organize research and development consortia in related fields. For this, various incentives are provided through tax exemptions, special depreciation, financial grants, availability of long-term low interest development loans, and government procurement, among others.

As a result of such an incentive system, we have witnessed a remarkable increase in the number of private research institutes from 52 in 1980 to 503 in April 1988, and of research consortia from none to 37 in the same time period.

(7) Korea has strengthened international technical cooperation in order to meet the rising tide of internationalization of technology development. Externally, to better cope with the growing interdependence of the world economy, Korea has been expanding both bilateral and multilateral international cooperation activities, especially since 1980.

As of the end of 1987, the Korean Government has exchanged scientific and technical cooperation agreements with 59 countries and holds Science Minister Meetings regularly. Furthermore, 69 international joint research projects have been in full swing with financial support from the government amounting to $4 million in 1988.

(8) Domestically, the regional dispersion of technology development is regarded as a major policy direction. The government has established industrial complexes in major regions of the country since the 1970's, while actively promoting the construction of Daeduk Science Town along with new technology-based industries in the vicinity. The government also plans to construct other specialized research parks in the major industrial areas throughout Korea, forming a network with Daeduk Science Town as the core.

(9) A climate favorable to the development of science and technology has been a major policy goal for laying a solid foundation for science and technology.

As such, the government, with the cooperation of the academic and industrial communities and the mass media, has launched a nation-wide science movement whose main objectives are to create an environment in which the general public can apply scientific principles to daily living and to instill the exploratory attitude of youth in science with a spirit of rationality, efficiency and creativeness.

Assistant Minister Bak reiterated Korea's desire to secure the aid of the Members of the delegation in getting approval for the overall umbrella Science and Technology Agreement which, he asserted, was of utmost importance to Korea.

Chairman Roe responded to the presentation of the three speakers by first congratulating Korea on its economic progress. He expressed his wonder and concern as to why the economic activity in the Pacific Rim nations was being ignored by so many of our government leaders. Chairman Roe spoke of his vision of creating the new wealth that our nation will need through science, technology, and education. He invited Korea to be a full partner in the development of the SSC. In addition, Mr. Roe issued an invitation to the Koreans to participate in an annual U.S./Korea legislative/government interaction patterned on the relationship the Committee has with Japan. Further he urged the Koreans to participate in an internship program whereby we exchange younger technical personnel for three-month periods to give them experience and a broad vision. Lastly, he suggested that Korea consider having an astronaut train for a space flight.

Acting Vice Minister Choe responded appreciatively and expressed the view that Chairman Roe's suggestions were very well worth considering by the Korean Government.

Mr. Packard made the point that the quality of our collective futures hinged on the proper utilization of science and technology. This implied we would have to find the optimum balance between protecting and sharing information.

Mr. McCurdy noted that Korea had clear areas of governmental emphasis. He asked if the Korean Government kept specific information about the R&D that private industry was performing both within and outside of the areas of governmental priorities.

Assistant Minister Seung stated that the government does not have the information about which Mr. McCurdy inquired. He then referred back to Mr. Packard's comment. He said that since 1986, the Korean Government has done its utmost to protect intellectual property rights properly. There have been several laws passed in Korea relating to protection of software. There is an interagency task force whose charge it is to implement the 1987 Universal Copyright Convention. Assistant Minister Seung went on to assure the Committee that the legal structures for protection of intellectual property rights were as good as those of the U.S.

Assistant Minister Bak added that Korea was now getting underway in developing space activity, primarily in the area of satellites.

MEETING: United Nations Command Security Forces (UNCSF)
De-Militarized Zone (DMZ), Korea

DATE: August 7, 1989

KEY OFFICIALS: Rear ADM. Larry G. Vogt, UNS
Senior Member
United Nations Military Armistice Commission

Lt. Col. Geoffrey J. Buckley
Commander
United Nations Command Security Force

Staff Sgt. Robert A. Kinsler
PAC Supervisor
United Nations Command Security Force

BACKGROUND AND DISCUSSION:

United Nations Command Security Force -- Joint Security Area. The UNCSF-JSA is the most forwardly deployed military unit in the Republic of Korea. The unit performs security and support missions vital to the upkeep of the Korean Armistice Agreement for the United Nations Command. These missions include maintaining security inside the Joint Security Area (often referred to as the Panmunjom Truce Village) and conducting counter-infiltration patrols inside the Korean Demilitarized Zone. Due to the military and political sensitivity of its operations, the UNCSF-JSA, composed of both American and Korean soldiers, is an elite all-volunteer unit with stringent selection requirements and high performance standards. American soldiers serve a one-year tour of duty with the UNCSF-JSA.

The organization established to implement the Armistice Agreement is the Military Armistice Commission, or MAC, composed of ten senior officers, five from each side to negotiate Armistice-related matters and discuss Armistice violations. The UNC component of the MAC consists of one U.S. Two-Star Admiral or General, a ROK Major General, a ROK Brigadier General, a British Brigadier who is also the Chief of the Commonwealth Liaison Mission, and one 0-6 level officer from among the foreign representatives of the UNC Advisory Group which includes Australian, Canadian, Philippine, Thai and British members.

The North Korean component of the MAC consists of four North Korean Generals and Colonels and one representative of the Chinese People's Volunteers.

The UNCSF-JSA is charged with the responsibility of providing security and support for MAC meetings. The members of this organization provide security and logistic support to the UNC component of the MAC and to the Swiss and Swedish members of the Neutral Nations Supervisory Commission. They provide the UNC portion of the Joint Security Force at Panmunjom and they provide transportation for the Swiss and Swedes when they travel within the Republic of Korea. This unit is attached to the Second U.S. Infantry Division for administrative and logistic support but is under the operational control of the Chief, Armistice Affairs Division.

The first provision of the Armistice Agreement establishes a Demilitarized Zone (DMZ), four kilometers wide, extending for two kilometers on either side of a military demarcation line, or MDL, and running generally along the line of ground contact at the time of the cease fire. The 151-mile MDL runs from the Han River Estuary in the west to a point north of the 38th Parallel in the east. It is marked by 1,292 markers printed in English and Korean on the south side and in Korean and Chinese on the north side.

Each side is allowed to have 1,024 persons in the DMZ/HRE at any one time, including soldiers called DMZ Police, civil relief, and maintenance personnel. The DMZ Police are permitted under the terms of the Armistice Agreement to be armed only with pistols or non-automatic rifles. In addition to these personnel, a small number of farmers who were living in the vicinity of Panmunjom at the time of the cease fire are permitted to continue to reside inside the DMZ.

Each side maintains a Joint Duty Office, or JDO, as an advanced Secretariat at Panmunjom. The JDO provides the main channel of communication with the North Koreans and maintains 24-hour a day telephone contact with the Communists. The Joint Duty officers meet every day except Sundays and holidays to exchange correspondence such as routine Armistice violation charges and reports on troops and equipment.

The Armistice Agreement also provided for an inspection system to determine the degree of compliance with the Agreement outside the DMZ. In order to accomplish this, a Neutral Nations Supervisory Commission (NNSC) was established composed of Swiss, Swedish, Polish, and Czech members. Their mission was to conduct investigations of troop rotations and equipment replacement in the north and south. However, the Swiss and Swedes' mobility was restricted by the North Koreans, and, in the south, there were allegations that the Poles and Czechs were spying. As a consequence, the inspections were terminated in 1956. Although their inspection function has been curtailed, the NNSC continues to meet weekly to review reports of troop and equipment rotation submitted by both sides. Despite their limited mission, the UNC position is that the members of the NNSC perform a valuable function as independent observers and act as a stabilizing influence in the JSA.

Military Armistice Commission meetings are held at the Joint Security Area at Panmunjom. The JSA is an area roughly 800 meters in diameter located in the western part of the Demilitarized Zone in what is referred to as the Military Armistice Commission Headquarters Area, or MACHA. This is the one area along the DMZ where U.S. troops are still stationed.

A battalion of the Second Infantry Division mans two guard posts in the MACHA (with one platoon each) and maintains a company alert force outside the DMZ. This unit provides security and, if war should break out, will handle the evacuation of the personnel in the JSA and the Swiss and Swedish members of the NNSC.

For the meeting with the UNCSF, the delegation was flown by helicopter the scant 26 miles from the metropolis of Seoul to the DMZ. RADM Vogt and Lt. Col. Buckley greeted the group upon arrival at the Joint Security Area.

Adm. Vogt emphasized that success in keeping peace in Korea and the region does not come without hard work. Success is based on training excellence and on ensuring that the North Koreans' perception of our capability and determination to repel aggression is clear and unmistakable. Military units assigned to the Joint Security Area know that they are sitting on a powder keg in an environment of turbulence and uncertainty and that the preservation of freedom requires training excellence to maintain the fighting edge. The United Nations forces must treat enemy strength and proximity as a real and imminent threat, since North Korea positions 65% of its ground forces within 50 miles of the border, and since these forces are structured in such a way and in such strength that they clearly exceed reasonable defense requirements.

MEETING: Country Team Briefing
Bangkok, Thailand

DATE: August 9, 1989

KEY OFFICIALS: Daniel A. O'Donohue
Ambassador

Victor L. Tomseth
Deputy Chief of Mission

John R. Eriksso[illegible]
Director of the USAID Mission
CODEL Control Officer

Ralph Boyce
Political Counselor

Robert Duncan
Economic Counselor

Glen Cooper
DEA Official

BACKGROUND AND DISCUSSION:

Ambassador O'Donohue welcomed the CODEL and introduced the other embassy officials present. He explained that the embassy in Bangkok is responsible for U.S./Thai relations, as well as a number of regional issues including refugees from Cambodia and Vietnam. He and other embassy officials briefed the CODEL on two topics: 1) the "Thai scene"; and 2) the U.S./Thailand relationship.

Thai Scene

The economically booming country of Thailand is in a period of transition from underdevelopment to greater industrial and economic development. A strong agricultural base underpins and provides stability to this dynamic economic growth. An obvious outgrowth of Thailand's economic growth is its growing confidence in dealing with internal and external problems.

Politically, the Thai government is a democratic coalition of elected representatives. While the coalition partners are frequently split on policy issues, the prospects for a continuation of stable government are good and probably essential to a continued economic boom.

Economically, a critical factor for Thailand was the 1975 collapse of South Vietnam. During the Vietnam years, Thailand became dependent on one economic relationship -- namely, that with the United States. Other relationships were subsumed. Now, the U.S. is only one of several countries with which Thailand enjoys and benefits from good political and economic ties. Through ASEAN (Association of South East Asian Nations), Thailand enjoys a whole series of cooperative relationships which are critical to its economy. For example, Thailand uses ASEAN to deal directly with the European Community rather than with the individual member countries.

Though the U.S. remains the largest Thai trading partner and has an almost exclusive military relationship with Thailand, Japan is now the largest source of investment in Thailand.

Thailand is negotiating with Cambodia and Vietnam on the difficult issue of refugees in Thailand, including 400,000 Cambodian refugees and 14,000 Vietnamese boat people.

U.S./Thailand Relationship

The security relationship between the U.S. and Thailand is critically important and has been stable since the post-World War II era. The U.S. foreign military sales (FMS) program, the primary source of modern military equipment for Thailand, has contributed to the continued improvement of the capability of the Thai military to counter potential threats to the country's territorial security.

A key dynamic in the U.S./Thailand relationship is the vast increase in bilateral trade. Although there remain significant problems associated with trade, on the whole a good economic relationship has been maintained, and Thailand continues to be the foundation for the U.S. economic position in all of Southeast Asia. Though Thailand has had a variety of governments in the past few decades, there has been an underlying continuity and always a desire and intense effort to succeed in U.S./Thailand trade negotiations.

In recent years, as the worldwide campaign against trafficking in illicit narcotics and dangerous drugs has become increasingly important, the U.S. and Thailand have worked together and with the United Nations in a broad range of programs. With U.S. support, a number of successful seizures and arrests have occurred as part of an effort to interdict the flow of illicit opiates out of the remote jungle area where Burma, Laos, and Thailand meet. In recent years, the Thai Government has undertaken an active program to eradicate opium planted in its territory. Though the Thailand government considers this a major priority, it has had only marginal results in stemming drug production from this area.

An abrasive issue on the U.S./Thailand agenda is the importation of U.S. cigarettes. Only domestic cigarettes are currently allowed to be sold in Thailand, whose government is fending off free trade proponents and U.S. cigarette manufacturers with public health arguments. (This issue is more thoroughly discussed in the meeting summary with the Thai Ministry of Public Health.)

SInce 1950, thcugh the U.S./Thailand Science and Technology cooperative agreements have ebbed and flowed, they can clearly be considered a "foreign aid success story." S&T cooperation reached a low point after the Vietnam War. Although the relationship is now growing, the renewal of the U.S./Thai Science and Technology Agreement has been postponed due to IPR problems. The Thai government believes that IPR issues will require a long negotiating process, and that IPR should be separated from renewal of the S&T agreement. (This issue is more thoroughly discussed in the meeting with the Thai Ministry of Science and Technology.)

Thai economic policy was for a number of years focussed on development of physical infrastructure. Economic policy today is much more typical of an advanced developing country, and includes major programs in natural resources, agriculture, the environment, family planning, educational institutions, and science and technology. Thailand still has a long way to go, however, in integrating science and technology into its economic planning. Currently, the Thai science and technology budget over a five-year period is $400 million ($80m/yr). This equates to 0.4% GNP to R&D and engineering spent by Thailand, compared to 2% GNP spent by Korea. By another relevant comparison, Korea has ten times as many scientists and technicians per capita as does Thailand (Korea=600/10k; Thailand=60/10k).

Only 30-35 percent of Thai students complete their secondary education, a figure which concerns Thai officials greatly, particularly when compared with comparable figures from other newly industrialized countries of Asia (Korea = 90 percent). The U.S. has made substantial contributions to Thai education. Through USAID funds, 12,000 Thais are trained annually, primarily in the U.S. There are also some Thais studying in the USSR, although because of the nature of the Soviet system, it tends to attract less qualified students. In an attempt to upgrade its supply of trained scientific personnel, Thailand has

created a Science and Technology Development Program which provides grants to Thai universities to train scientists to meet Thailand's agricultural and industrial needs.

Thai scientific capability is impressive in many ways. In the past six years, Thailand has won 75 (25%) of the research grants available for developing countries through USAID.

Cong. McCurdy asked about the Thai reaction to the events of June, 1989, in Tiananmen Square. Ambassador O'Donohue responded that the Thai government's feeling was that the Chinese government is unpredictable and that it is not a good time to "stick a thumb in Chinese eyes." The Ambassador also noted that the perception of the Vietnamese threat has changed. Once seen by Thailand as an aggressive military threat, Vietnam is now preoccupied with domestic, near-term economic problems. Thailand feels that in this weakened state, Vietnam can be driven toward a settlement regarding Cambodian refugees.

MEETING: American Chamber of Commerce in Thailand

DATE: August 10, 1989

KEY OFFICIALS: Mr. Bob Martin, Proctor & Gamble
Chamber President

Mr. Tom Seale
Executive Director of the Chamber

Mr. Tom White, Phelps Dodge
Chairman of the Asian Regional Group of Chambers

BACKGROUND:

The U.S. is the largest foreign investor in Thailand, with investments totalling $4 billion, but it is rapidly losing dominance. In 1976, the U.S. share of new foreign investment was 30%. By 1987, that share had dropped to 11%; Japan, Taiwan, and South Korea each had larger shares. The major areas of concern to the Chamber include intellectual property rights, market access, trade promotion, and the budget of the U.S. and Foreign Commercial Service.

IPRs - Thailand has been reluctant to protect intellectual property rights. For example, pharmaceutical products are now ineligible for patent protection under Thai law. The Thais have offered to improve their patent system after the end of the current round of GATT talks; however, the U.S. Government wants to see change sooner. In addition, the U.S. has pushed for some form of protection for new drugs until the new law becomes effective. Protection of computer software remains in doubt. Current Thai copyright law appears to protect software, but some Members of Parliament favor a separate law for software.

In January, because of remaining unresolved issues on patent protection, the President announced that certain cuts in Thailand's access to Generalized System of Tariffs and Preference (GSP) would be made. At a meeting with U.S. officials in March, the Thai Minister of Science, Technology and Energy recognized the U.S. position on property rights, but argued that it is too early to expect the Thais to adhere to the same standards with respect to intellectual property or patent protection as the developed countries. Thailand was named a "priority watch country" in May under the Special 301 provisions of the 1988 Trade Act for its deficiencies in the protection of intellectual property.

MARKET ACCESS - Although the U.S. is Thailand's largest trading partner, accounting for 19% of exports, trade tensions have increased. Thai-U.S. bilateral trade talks are being resumed to head off trade retaliation. In addition to the IPR issue, cigarettes and agriculture will be discussed. Thailand forbids cigarette advertising and the import of foreign cigarettes, a policy which has prompted American cigarette exporters to file a 301 trade action. Thailand cut tariffs on three agricultural products last year. Imports of these items from the U.S. have increased as a result.

Thailand let the U.S.-Thai textile agreement expire last year, rather than agree to an overall limit on exports. Talks on resumption have so far been inconclusive.

Recent moves to restrict market access to Thai exports have raised complaints about growing American protectionism. The withdrawal of GSP privileges is likely to force affected industries to seek new markets outside the U.S.

TRADE PROMOTION - The U.S. and Foreign Commercial Service is part of the International Trade Administration, with a budget for FY 1989 of $74.4 million. The FY90 request was $86.6 million; the House Appropriations mark is $81.4 million. Its function is to produce, market and manage a line of products and services geared to the marketing information needs of the U.S. exporting and international business community. It also manages the delivery of ITA programs across the U.S. and in 64 countries. The Service manages trade fairs and exhibitions, trade missions, overseas trade seminars; promotes products and services through export development offices overseas; and assists State and private sector organizations on export financing.

The Chamber has been concerned about cuts in U.S. trade promotion efforts, and in the use of mixed credits by trading competitors.

DISCUSSION:

During the course of a working breakfast the Delegation was briefed on a number of issues of interest to the American business community in Thailand. The point was made that Thailand is rapidly making the difficult transition from an agricultural economy to one of the leaders among the developing nations of Southeast Asia. In the opinion of the American Chamber of Commerce there were several major barriers to open and free access by American companies to the Thai marketplace.

The first, and most important barrier, is that other nations, most notably Japan, are making low cost financing available to their nationals to establish new business in Thailand. For example, Japanese companies can receive 100 percent financing at 3 percent per year for periods of up to ten years. The Chamber would strongly support a similar program for U.S. companies through the Export-Import Bank. They also believe that the Foreign Commercial Service needs additional people and a larger budget in view of the market potential in Southeast Asia over the next decade.

The second major barrier faced by U.S. companies is the lack of a double taxation treaty between the United States and Thailand, even though Thailand presently has such treaties with 22 other developed nations. Negotiations on such a treaty began in 1984 and quickly bogged down. The Chamber believes that the time is now ripe to move to re-open those negotiations and to move quickly to agree on a new treaty. The Chamber also expressed the strongest possible support for retention of Section 911 of the United States Internal Revenue Code which provides an annual $70,000 earned income tax credit on income earned overseas.

The final major barrier is the continuing problem of Thai failure to adequately enforce protections of intellectual property rights. It is still possible to find open street sales of numerous counterfeit products of name brands of clothing, watches, accessories and computer software. The Chamber emphasized that there have been stresses in the past over intellectual property rights and they have been politicized by Thai opposition parties. The United States must implement the provisions of the Omnibus Trade Bill firmly and evenly so that U.S. companies can compete on a level playing field.

MEETING: House Committee on Science, Technology, and Energy
Thai National Assembly
Bangkok, Thailand

DATE: August 10, 1989

KEY OFFICIALS: Mr. Boonyong Watanapong
Chairman of the Committee

BACKGROUND:

Thailand is a centralized constitutional monarchy with a prime minister. The king has exercised little direct power in recent years, but remains a popular symbol of national unity. A partially elected bicameral National Assembly (Ratha Satha) was reestablished under the 1978 constitution, replacing a unicameral, military-dominated National Legislative Assembly which had been appointed in 1977.

The Senate (Woothi Satha) is the upper house, consisting of 261 members appointed for 6-year terms by the king on the recommendation of the prime minister. Its function is largely advisory, since current law provides that the Senate will not meet in joint session with the House of Representatives to appoint the prime minister, debate confidence motions, or adopt the budget.

The House of Representatives (Satha Poothan) is the lower chamber, made up of 347 members elected by direct universal suffrage for 4-year terms, subject to dissolution. In 1988, approximately 15 political parties were represented in the House.

In 1988, Premier Prem Tinsulanonda dissolved his cabinet and parliament after the main party in his coalition government split over a bill to discuss the protection of U.S. copyrights (see Background on Chamber of Commerce meeting). The lower house had passed the bill, but 32 of the 99 Democrat members opposed the measure, arguing that it amounted to capitulation to U.S. pressure.

SCIENCE ISSUES - The recent influx of foreign investment has strained Thailand's infrastructure, including in the area of science and technology. The government is anxious to build up a pool of scientists and technicians, and is planning to send a number of its young people abroad for technical and scientific education. In addition, Thailand is encouraging joint ventures with firms from countries such as the U.S. and Japan in order to attract high technology to the country.

DISCUSSION:

The meeting featured a frank and open discussion of the relationship between the United States and Thailand in the areas of Science, Space and Technology. The Thai delegation expressed thanks for American assistance in the past and offered hopes that we can resolve problems and remove obstacles to future cooperation.

It was pointed out by the Thai delegation that they have accomplished much as a result of U.S. assistance over recent years in the form of grants and loans. Mr. Watanapong expressed hope that Thailand might receive a greater proportion of grants in the future. While he could see continued Thai progress in the areas of science and technology, he did not foresee a Thai space program in the immediate future.

The U.S. delegation offered congratulations on the economic and political progress Thailand has made in recent years. It was noted that Thailand is rapidly becoming a world economic power, and is already an economic leader in Southeast Asia. The United States is particularly

looking forward to the renewal of science and technology agreements between Thailand and the United States. Members of the U.S. delegation expressed strong support for continuation of student exchanges and the sharing of technological data.

On the issue of intellectual property rights the Thai delegation agreed that the issue was important and that the Thai government was committed to find ways to resolve the issue to our satisfaction. However, the Thais said that as a developing nation they needed time to ensure that the resolution was politically supportable and that it adequately addressed Thai requirements.

In closing there was a discussion of the environmental challenges that face Thailand. It was pointed out that the United States is a young nation, only two hundred years old, in comparison with the Thai nation which has existed since antiquity, more than 5,000 years. As it moves rapidly from an agricultural economy to a developed nation, Thailand is faced with a series of decisions that will have major environmental consequences in the decades to come. The U.S. delegation urged the Thais to take the long-term view and move now to protect their unique environment for future generations.

MEETING: Ministry of Public Health
Bangkok, Thailand

DATE: August 10, 1989

KEY OFFICIAL: Hon. Chaun Likphai
Minister of Public Health

BACKGROUND:

Mr. Likphai has held many offices as a member of the Democrat Party. He was elected Speaker of the House in 1986 when the Democrat Party became the majority party in the government. In August 1988, he was appointed Minister of Public Health.

ALAR IN APPLES

Mr. Likphai plans to visit the U.S. at the end of this month to meet with HHS Secretary Louis Sullivan. The main topic of discussion will be the recent controversy over the ALAR content in apples. The Thai media accused the U.S. of dumping apples with ALAR on the Thai market, and the results were drastic. The Thai public reacted by sharply reducing their purchases of U.S. apples, and $1 million of Washington State apples are rotting at the Thai docks.

The Thai government reacted with extensive ALAR-testing by the Thai FDA. Twenty parts per million is currently the allowable ALAR level in Thailand and in the U.S.; the Thai FDA claimed they found levels of 50 parts per million. The accuracy of these test results have been seriously questioned by U.S. experts. Likphai and Sullivan will discuss the technical and policy issues relating to ALAR-testing and ALAR tolerance levels. The Thai government has expressed a desire to establish 1) more accurate ALAR-testing regimes and 2) a possible lower tolerance level (as low as 0-10 parts per million). The U.S. government is also currently investigating the desirability of lowering the U.S. standard of tolerance level to 0-10 parts per million.

U.S. - THAILAND CIGARETTE TRADE

A major trade and health issue in the news is the exportation of U.S. cigarettes to Thailand. All foreign cigarettes are illegal in Thailand, a position strongly supported by anti-smoking lobbies in Thailand and the U.S. The state-owned Thailand Tobacco Monopoly, which controls the manufacture, distribution and sale of cigarettes in Thailand, announced it had put aside earlier objections by agreeing in principle to allow cigarette imports. Tempting to some Thai government officials is the estimate that taxes from the sale of legalized imported cigarettes would raise 11 billion baht ($426.4 million) annually.

On May 31, 1989, the U.S. Trade Representative's office announced a Section 301 investigation of the Thai cigarette industry. (Section 301 of the 1988 Omnibus Trade Act is aimed at breaking down barriers to U.S. exports.) U.S. cigarette makers contend that the Thai ban on cigarette advertisements constitutes an unfair trade practice.

The Thai Public Health Office is leading the charge against the legalization of foreign cigarettes. Thai officials have looked at the statistics after Japan opened its doors to foreign cigarettes and found a substantial increase in the number of smokers, the greatest rise being amongst women and children.

GENERAL HEALTH ISSUES

After being ranked the 17th most populous country in 1975, the Thai government sponsored a successful family planning program. Largely as a result of this program, the annual population growth rate has declined dramatically from 3.1% in 1960 to less than 1.6% in 1987. Life expectancy increased from 51 years in 1960 to 64.2 years in 1979.

There is a growing need for hospitals, clinics, and other medical facilities in Thailand, both to serve Bangkok's growing population and to complement efforts to develop industrial and tourist activities outside Bangkok.

DISCUSSION:

Mr. Likphai warmly welcomed the CODEL and stated that he was particularly pleased to see Chairman Roe, whom he had previously met while holding the office of President of the Parliament.

Mr. Likphai began by stating that many Thais have a dangerous mind-set that "Bangkok is Thailand." As Minister of Health, he must continually explore ways to help decentralize and distribute help to all areas including rural areas. He expressed his appreciation for the help Thailand has received from USAID in implementing health-related projects and for the U.S. Ambassador's efficiency and aggressive activity towards solving Thai health problems.

Chairman Roe stated that direct, person-to-person communication is imperative to the cooperative solution of problems involving the health and safety of every citizen of every nation.

Cong. Packard said that in his opinion the most important area of biomedical research is the improvement of health care systems. It is critical to encourage Thai and U.S. medical students and biomedical researchers to work together to improve the quality of biomedical research, to become instructors and leaders, and to look for solutions to benefit the whole world.

Mr. Likphai said the first priority of his ministry is improvement of primary health care. The second priority is preventative medicine with a focus on education, which will help the Thai people to help themselves to better health. The third priority is infrastructure for medical services including hospitals, health centers, and other facilities to treat common illnesses. The infrastructure needed in Thailand to promote better public health includes general hospitals at the regional level, community hospitals at the district level, and health centers at the sub-district level and village levels. Though a class gap exists, it is accessibility of health services, not the class gap itself, that is the biggest hindrance to the provision of medical help in rural areas.

At the top of the priority list of diseases are ailments caused by poor eating and drinking habits, dental problems, and AIDS. It is estimated that 86 percent of the intravenous drug users in Thailand test positively for the AIDS virus. Health statistics show that cardiac disease is the #1 killer in Thailand, cancer is #2, and accidents (mainly motor related) are #3. The Ministry of Public Health is implementing preventative medicine by emphasizing immunization against communicable diseases and by education for accidents and for non- communicable diseases such as cancer and diseases exacerbated by poor eating habits.

Cong. Volkmer asked which of the U.S. programs are the most beneficial in the health area. Mr. Likphai stated that the USAID Family Planning and Population Control Project has contributed most significantly to Thai health objectives. In 1988, $29.1 million was used to purchase equipment and medicine for the Family Planning Program.

Cong. Mineta asked about the status of M.D. and Ph.D. programs in Thai universities. Mr. Likphai explained that there is focused development of the medical sciences programs in some Thai universities with financial assistance from such entities as the Rockefeller Foundation. However, a large number of Thai students continue to be trained in medicine, science, engineering and other technical areas in the United States. It is noteworthy that all of Mr. Likphai's aides attending the meeting were trained in medical institutions in the United States.

Cong. Volkmer questioned the ban on U.S. cigarettes for health purposes when production and sale of Thai cigarettes are still permitted. Mr. Likphai acknowledged that allowing domestic production of cigarettes is not ideal and that policies are in place to encourage reduction of cigarette consumption; however, an individual should retain the choice of smoking cigarettes. The Minister pointed out that it is easier to control the supply and distribution and therefore the accessibility to cigarettes when foreign imports are not permitted.

MEETING: Ministry of Science and Technology
Bangkok, Thailand

DATE: August 10, 1989

KEY OFFICIALS: Mr. Prachaup Chaiyasan
Minister of Science and Technology

Mr. Sanga Sabhasri
Chairman of the Senate Committee on
Science and Technology

BACKGROUND:

The U.S. - Thai S&T Agreement was signed on April 13, 1984 and is the formal document outlining the intent of the two countries to collaborate in this area. The umbrella agreement expired in April of 1989. In accord with the provisions of Executive Order 12591 and the Omnibus Trade and Competitiveness Act, the U.S. has proposed a six month extension to the agreement to allow time to negotiate renewal of the agreement and its intellectual property rights (IPR) Annex to protect U.S.-origin, COCOM-controlled equipment, technology and information.

The agreement inspired a major USAID-supported effort to upgrade S&T capability in Thailand. The State Department informs us that the implementation of this 1985 program afforded the U.S. frequent and useful opportunities to discuss many issues of policy concern - including IPR. The 49 million dollar USAID Science and Technology for Development Project (STDP) is about halfway through its planned seven year life. Although there have been some delays in implementation, the project is considered a key element of USAID strategy for Thailand. It has focussed on institutional development, development of an indigenous technical consulting industry, training, and improved marketability through better testing and standards of domestic products. The USAID project is not formally under the S&T agreement.

Official U.S. - Thai S&T cooperation has become a very visible and important area of bilateral relations between the two countries. Government to government assistance and cooperation in S&T is regarded by the Thais as the special province of the U.S. due in large part to the extensive ties the Thai scientific community has with the U.S. The S&T community in Thailand provides a growing bridge between the traditionally important civil service and universities, and the increasingly professional management group of the modern private sector. Outside of the AID project, there are MOU's for cooperation in biomedical sciences (HHS); for direct reception and distribution of LANDSAT data (NOAA); for training and technical assistance in national parks (NPS); and for agricultural development.

The National Science Foundation funds eight cooperative basic science research projects with Thailand. The National Oceanic and Atmospheric Administration (NOAA) signed an MOU in September 1988 with the National Research Council of Thailand to record, process, archive and distribute Landsat data. The Smithsonian has had continuing science interests in Thailand. The U.S. Department of Agriculture has an MOU on Agricultural Development, and the National Park Service conducts a training program with USAID funding.

In general, the U.S. - Thai S&T relationship is a strong positive element in our bilateral relations. It is anticipated that as Thailand continues to develop, it will become a more important one for both sides. The matter of IPR-related issues is unclear from the briefing materials. Some assert there has never been a problem, while others

claim that there are emerging IPR problems. To date no intellectual property has resulted from the S&T cooperation, and current areas of cooperation are in basic scientific areas which are unlikely to produce intellectual property.

In meetings this year between Thai's S&T officials and U.S. officials, several topics of interest have been discussed:

1. The Thais expressed hope that the negotiations to renew the S&T agreement would focus on that agreement rather than the larger trade and intellectual property issues.

2. The legislative initiative of symmetrical access which was legislated by the Science, Space, and Technology Committee as part of the Omnibus Trade Bill Sec. 5171 has been brought to the attention of the Thais by U.S. officials.

3. The Thai government plans to finance the studies of up to 800 Thai students abroad, including the U.S., and to assign S&T advisors to the Thai embassies in Brussels, Tokyo, and Washington.

4. The Thais are interested in U.S. clean coal technology since they depend on lignite. They have noted also in prior meetings that there is a move in their country to ban all commercial logging. Also, there is some interest in building conservation R&D activity in Thailand.

DISCUSSION:

The Minister began the meeting by referring to the 1984 S&T Agreement, and suggesting that it be extended for one year while discussions between the two countries go on. He stated that the present U.S. constraints are impractical for signing of the agreement in the near future. He feels that continuing cooperation is the most important consideration, and that Thailand is being pushed too hard on some of the specific aspects of trade and IPR. He seemed to be referring to tobacco and IPR issues when he suggested that one does not try to push the elephant, but if you whisper in his ear he will walk straight and work hard for you.

The delegation also learned that the Science, Technology and Energy Ministry is planning to establish three more national science centers to encourage research for national development. The Minister said the ministry will allocate funds next fiscal year to set up national centers of marine science, information technology and space technology. At present, there is a national center of genetic and biotechnology engineering, which has funded many research projects. At the same time, in preparation for the new centers, some 800 scientists will go to the United States for further education.

Mr. Roe called for Thai participation in U.S. space technology development and suggested that Thailand should have an astronaut in the near future.

The Minister also said the ministry would ask for U.S. cooperation on information technology which the ministry is working on under the project known as Data Processing Zone (DPZ). Approved only two days earlier, DPZ uses Landsat data for natural resources management.

Mr. Mineta commended the government for its vigorous economic growth. Mr. Volkmer noted that Thailand is active in the areas of genetic engineering and biotechnology. Mr. Scheuer offered his view that Thailand is in the vanguard for its concern about scientific matters and serves as a model in family planning and disease education among developing countries.

MEETING: Ministry of Foreign Affairs
Bangkok, Thailand

DATE: August 11, 1989

KEY OFFICIALS: Mr. Siddhi Savetsila
Minister of Foreign Affairs

BACKGROUND:

The United States and Thailand have enjoyed excellent bilateral relations for over one hundred and fifty years. The two countries have been mutual security treaty allies since the conclusion of the Manila Pact in 1954. Since then, each subsequent U.S. administration has reaffirmed our commitment to Thai security.

The Thai economy recovered strongly from a painful period of adjustment in 1985/86 brought on by declining terms of trade, a growing budget deficit, and a government-imposed austerity program. Conservative economic management, the drop in oil prices, and lower world interest rates helped the economy return to a healthy 6.6 percent growth in 1987 and a very strong 11.5 percent growth in 1988.

Seventy percent of the population depends directly on farming for a living and has seen its real income fall in the last few years.

The most impressive growth will continue to be in the industrial sector. This sector was forecast to grow by 11 percent in 1988, led by an overall surge in exports of over 40 percent. Thailand's eight principal exports are growing at the rate of about 27 percent for 1988. Even greater improvement is being recorded in selected manufactured exports such as computer components, integrated circuits, canned fish, footwear and furniture.

The U.S. remains Thailand's largest market, absorbing 19 percent of Thai exports. The U.S. has traditionally enjoyed a trade surplus with Thailand, but over the past five years this trend has reversed. In 1988, Thailand's trade surplus with the U.S. was about 1.5 billion dollars, or $617 million higher than in 1987. U.S. merchandise exports to Thailand were $2 billion, rising $420 million or 27.2 percent compared to 1987. Thailand was the United States' 31st largest export market in 1988. U.S. imports from Thailand totaled $3.4 billion in 1988 or 43.4 percent higher than in 1987.

The stock of U.S. foreign direct investment in Thailand was $1.3 billion in 1987, $200 million higher than in 1986. U.S. direct investment in Thailand is largely concentrated in petroleum and electric and electronic equipment.

The protection of intellectual property rights and market access for U.S. exports (particularly agricultural) is the centerpiece of U.S. trade policy towards Thailand. These issues are very sensitive in a developing country like Thailand where the majority of the population remains dependent on agriculture for its livelihood. For the past several years, the U.S. has been concerned with certain deficiencies in Thai patent law and the absence of copyright protection for U.S. works. However, U.S. accession to the Berne Convention, effective in March 1989, has resulted in copyright protection now being extended to American works. In January 1989, because of remaining unresolved issues on patent protection, the President announced that certain cuts in Thailand's access to the General System of Tariffs and Preference (GSP) would be made. Furthermore, Thailand is one of eight countries

named in May as "priority watch" countries under Section 301 for intellectual property rights problems. A review will be conducted by November 1 to determine what further steps should be taken. Consultations with the Royal Thai Government are underway.

Recent moves to restrict market access to Thai exports have also raised complaints against growing American protectionism.

Trade disputes have occurred across a wide range of areas, including textiles, civil air, workers' rights, cigarette exports, and, more recently, steel exports.

Certain bilateral economic issues are sensitive in addition to traditional security concerns:

-- Thais are very concerned about U.S. agricultural export subsidies (particularly for rice) and the threat of protectionist measures by the United States, especially on textiles and steel.

-- Shrinking U.S. budgets for development and security assistance and refugee programs worry Thais.

-- U.S. continues to press for increased intellectual property right protection for U.S. works. Unresolved disputes over IPR, particularly patent protection for pharmaceuticals and copyrights for computer software, recently resulted in reduced GSP benefits on about $165 million of Thai exports.

DISCUSSION:

Minister Savetsila is the longest serving foreign minister in ASEAN, and has used his influence in forcing the Vietnamese to end their illegal occupation of Cambodia. He mentioned Cambodia in his opening remarks and touched also on economic development and the Thai concern for protecting the environment.

In response to Mr. Scheuer's question about destruction of the rain forests, the Minister mentioned the ban on logging, the reforestation project and the government's work with small land owners who are used to cutting. As an indication of the measure of control, he stated that the government controls the sawmills and receives reports on the lots of lumber coming from Laos and Cambodia. He said the King himself is greatly concerned about environmental problems and reforestation.

Mr. Mineta mentioned Seascape, an American owned-company that employs about 11,000 Thais, and asked about copyrights. The Minister replied that there is a strong determination in his country to get the matter of copyrights negotiated by the end of 1991.

Mr. Volkmer raised the matter of foreign investment and noted that Thailand has taken steps to open its country to foreign investment. The Minister agreed, but said that Cambodia continues to require effort because of the refugee problems, and the need to help in reconstruction of its economy. He said that this work requires agreement among the big powers, and he hopes for peace in the region in one or two years.

Mr. Hughes raised his concerns about narcotics traffic and the lack of a Thai conspiracy law. The Minister said that Thailand considers such a law important, but that the ultimate solution of this regional problem will require the participation of all of the ASEAN nations. It was also noted during the discussion that the National Legal Assistance Pact has not yet been ratified.

Mr. Roe concluded by stating the importance of developing two or three high-profile issues to focus attention in the Pacific Rim on the Thai/U.S. relationship. He touched on high-resolution television and on the super collider, and offered to continue discussions when Thai leaders visit the U.S. in the near future.

MEETING: Chiang Mai University
Chiang Mai, Thailand

DATE: August 12, 1989

KEY OFFICIALS: Mr. Kasem Watanachai
President
Chiang Mai University

Mr. Chomcharlao Ruangphong
Vice President for Administrative Affairs

Mr. Kittichai Wattananikorn
Vice President for Academic Affairs

Mr. Choti Theetranont
Vice President for Research and Planning

Mr. Luechai Chulasai
Vice President for Foreign Relations

BACKGROUND:

The CODEL took a short tour of Chiang Mai University with its President on August 12. Chiang Mai University is the main university in the northern part of Thailand. It was established in 1964 and currently has twelve departments and three institutes. The student body numbers over 12,000 and all subjects are taught in the Thai language. The university has been able to secure U.S. grant aid for select collaborative research projects.

Dr. Kasem Watanachai is the President of the University. He is a medical doctor and a summa cum laude graduate of Chiang Mai, 1967. His past positiions at the University include Vice-President for Academic Affairs and Vice-President for Student Affairs. Dr. Watanachai was a Fulbright grantee when he was in high school.

DISCUSSION:

Chiang Mai University, now in its twenty-fifth year of operation, is focussed on two major objectives: to produce graduates and to conduct basic and applied research. The first academic program established by the university was in medicine and was accomplished with the assistance of the University of Illinois. The second program was in dentistry, with the aid of the University of Alabama. Chiang Mai's Nursing School participates in an exchange program with several U.S. universities. There are also various student exchange programs with the University of Wisconsin at Madison, St. Olaf's College in Minnesota, and with the University of California System for summer courses in Thailand.

Currently, Chiang Mai has a need for teaching staff in the Management Sciences. Dr. Watanachai said that they are getting some help from the Kennedy School at Harvard.

Concern was expressed about a shortage of engineering graduates in Thailand which has been heightened by a recent trend of losing engineering faculty to the private sector.

University administrators participating in the meeting cited a need for enhanced programs in Hotel Management and Agricultural Administration, and also for more graduates in the area of Business Administration.

Chiang Mai's geographical location places it in a strategic position to become the training base for students from the surrounding Indochinese countries.

The Agency for International Development (AID) has awarded a total of 16 science grants to Chiang Mai since 1983. To date, the grants come to a total of $2.34 million. Nine grants (6 on-going, 3 completed) have been awarded under the Program in Science and Technology Cooperation (PSTC), two grants (already completed) under the Board on Science and Technology for International Development (BOSTID), two grants (ongoing) under the U.S.-Israel Cooperative Development Research Program (CDR), and three grants (ongoing) under the bilateral program Science and Technology Development Board (STDB). One further proposal is currently being reviewed under the PTSC Program.

Chiang Mai is an exceptionally strong academic institution and ranks second among Thai universities in receiving centrally funded research grants from AID. It should be noted that Thailand has received far more of these grants in worldwide competition (over 20%) than any other country.

Centrally Funded Grants Awarded to Thailand since 1983		
PSTC	41 grants total	$ 5,730,594
U.S.-Israel CDR	21 grants total	3,281,798
BOSTID	11 grants total	1,547,970
Total:		$10,560,363

In summary, Thailand in general and Chiang Mai University in particular are advocates of a strong science and technology base for the current and future Thai economy. Continued connections with the United States through science and technology agreements and grants are an important component of the Thai Government's effort in these areas. It is clear that Thailand will play an expanding role in Southeast Asia in training university students from neighboring countries, and in producing an expanding variety of products and services for the global marketplace.

MEETING: DEA (Drug Enforcement Administration) Briefing, Chiang Mai, Thailand

DATE: August 12, 1989

KEY OFFICIALS:

Victor Tomseth
Deputy Chief of Mission
U. S. Embassy - Bangkok

Robert Retka
Deputy Director, Narcotics Assistance Unit
U. S. Embassy - Bangkok

Michael Mann
Acting Special Agent in Charge
Drug Enforcement Administration
Chiang Mai

Steven Warobec
Intelligence Analyst
Drug Enforcement Administration
Chiang Mai

BACKGROUND:

Thailand continues to be a significant producer of opium and serves as the major trafficking route for opium and heroin produced in the Golden Triangle region of Southeast Asia. With heroin imports from this area of the world now accounting for over 40 percent of the U.S. heroin market, interest and concern over host country and U.S. supported efforts in drug control are increasing.

The Thai Government carried out opium crop surveys and continued crop substitution, eradication, law enforcement and demand reduction during early 1989. Opium production this year has increased, due to higher yields which resulted from ideal growing conditions. Enforcement actions are expected to produce significant numbers of arrests during 1989 but seizures are expected to be down in comparison with last year. Arrests have continued to be primarily for possession and consumption, however.

Thailand has been slow to improve its legal system and develop asset seizure and conspiracy laws. The United States continues to press for such legislation as well as for ratification of the Mutual Legal Assistance Treaty signed in 1986. Drug abuse and public awareness activities continued during the first months of the year and new surveys are expected soon giving a better picture of the Thai drug abuse situation.

According to statistics of the Office of the Narcotics Control Board (ONCB), based on an aerial survey and supplemented by field observation, approximately 4,816 hectares were planted with opium poppy, during the September, 1988, to February, 1989, growing season. The major growing areas continue to be the three northern provinces of Chiang Mai, Chiang Rai and Mae Hong Son. Plantings are estimated to have increased by about four percent from last year. The yield factor, however, was much higher than last season, partly because of better growing conditions and partly because of more empirical sampling methods by the ONCB survey team. The result is an overall two-thirds increase in the production estimate from 30 to 50 metric tons of opium.

Reliable data on the extent of cannabis cultivation does not exist since cultivation is scattered throughout the country with no defined growing season. The data that are available, however, suggest strongly that there has been a marked reduction of planting in Thailand during the past three years and a corollary increase in planting in Laos and Cambodia. Also supporting the thesis that cannabis production has declined in Thailand is the fact that large seizures of marijuana interdicted during the past year in the Pacific en route to the United States have originated in Laos.

Farmers have adopted a number of concealment and evasion techniques which have limited the impact of the current crop destruction program. The program continues to inflect damage to the opium crop, but at present it is estimated that only about 20 percent of total production is totally eliminated. The eradication issue has been discussed with the ONCB and the Royal Thai Third Army who have been urged to double the removal rate through better field location and more complete crop destruction. Assessment of progress in the marijuana eradication program is hindered by the fact that no overall estimate of production is available. Through May of this year, about 49 tons of fresh marijuana had been seized and destroyed by Thai authorities.

With the virtual ending of eradication and enforcement activities in Burma, heroin production and refining in Thailand have increased. This increase in illicit production has not been matched by corresponding interdiction success by Thai authorities. Corruption and lack of a conspiracy law hinder effective enforcement. Narcotics arrests have increased steadily during the past several years but these have been primarily for possession and consumption (over 90 percent), especially of non-opiate drugs (about three-quarters of the total). Legal proceedings against two major trafficking figures arrested in late 1988 and the spring of 1989 have not been concluded to date. Total arrests for narcotics violations during calendar year 1988 exceeded 50,000.

Seizures of heroin and other opiate drugs during 1988 exceeded 20 tons of opium-equivalent. However, 1988 was a record year for seizures which is not likely to be matched this year. Six heroin refineries have been destroyed so far in 1989 according to DEA records. Recent Royal Thai Government reports in the news media indicate a total of nine refineries destroyed, but some of these are believed to have been inactive when destroyed.

DISCUSSION:

I. DEA

The DEA briefing was conducted by Mike Mann, assisted by Steve Warobec. The DEA contingent in Chiang Mai consists of 4 DEA agents, 2 U.S. secretaries, 6 Thai investigators, and the 3 Thai security officers.

The DEA relates to four counterpart agencies in the region:

1. The Narcotics Crime Suppression Unit of the Thai National Police. This national policy agency maintains about 30 officers in the northern provinces, including 10 in Chiang Mai and 10 in Chiang Rai. It has full investigative authority, including carrying out undercover activities.

   DEA provides financial assistance toward the funding of operations of this unit.

2. The Office of the Narcotics Control Board (ONCB). ONCB, in addition to its nationwide responsibility for narcotics supply reduction, also does drug intelligence work. ONCB maintains a staff of 12 in Chiang Mai and 6 in Chiang Rai.

3. The Provincial Police Narcotics Suppression Unit. Staffed with 16 officers, this unit has narcotics police powers within the Chiang Mai province.

4. Thai Boarder Patrol. The primary narcotics related activity of the Boarder Patrol is the detection and destruction of heroin laboratories in the region. The U.S. Special Forces has provided training to this 50 person unit, which destroyed six labs in 1988 and has taken out five so far in 1989.

DEA-Chiang Mai operates with a $216,000 annual budget, 70 percent of which goes to support local (Thai) enforcement operations.

The DEA estimates that 50 percent of the heroin produced in or passing through the region is headed for the United States.

Congressman Bill Hughes, Chairman of the Crime Subcommittee on the Committee on the Judiciary, which has responsibility for the budget and programs of the DEA, inquired about the situation in Burma, which adjoins the Chiang Mai province.

Mr. Mann responded that the situation in Burma has deteriorated recently. Following the installation of a new, repressive government in Rangoon, the United States "decertified" Burma as a country not cooperating in the suppression of narcotics trafficking, and suspended all aid programs.

Burma produces 70-80 percent of the opium in the Golden Triangle of Burma, Thailand, and Laos. With political changes and favorable weather conditions, Burma's production is expected to increase by 25 percent this year, to approximately 1,600 metric tons.

The political changes in Burma and the U.S. decertification have led to a cessation of Burmese cooperation with the United States on narcotics matters, and (DEA reports) a virtual cessation of all Burmese efforts to suppress the heroin traffic in the tribal regions of central Burma, which border on Thailand.

According to Victor Tomseth, Deputy Chief of Mission, Bangkok, the view of the U.S. Mission in Burma is that, given the very small efforts being exerted by the Burmese against drug trafficking before the cessation of the U.S. aid, the interest of the United States in combatting heroin trafficking in the region is better served by seeking fundamental political change in Burma, change which must deal with ethnic tribal issues. (The areas where the ethnic tribal issues predominate also contain the opium and heroin producing regions of Burma.)

The DEA estimates that there are several dozen labs in the Thai-Burma border area. Most of these are in Thailand, but all the large ones are in Burma, a short distance from the border. The ones in Thailand are small, and hidden under foliage in ravines so that they are not visible from the air. The ones in Burma are not hidden, because, we are told, "they don't have to hide them".

Mr. Scheuer noted that for years, DEA has been reporting that it is interdicting 5-10 percent of the heroin coming through the area. If this is true, he inquired as to the rationale for the program.

Mr. Mann responded that the DEA operation is a "finger in the dike" operation. In order to substantially increase the amount of heroin interdicted, it would be necessary to have a much larger DEA presence in the region.

Mr. Mann indicated that although the terrain is rugged and roads virtually non-existent on the Burmese side of the border, there is a very good road network on the Thai side that goes all the way up to the border. As a result, it becomes much more difficult to interrupt or intercept the supply route once it crosses into Thailand.

Since Thailand has long been a net importer of opium, Thailand and the Chiang Mai region are most significant for the role they play in processing, trans-shipment, and management of the heroin trade to the United States -- heroin produced for the most part in Burma.

When asked to sum up the results of the recent developments in Burma, as manifested in the Chiang Mai province, Mike Mann responded "there are just a lot more people (in Chiang Mai) offering a lot more dope". He stated that the price of a kilo of heroin in Chiang Mai is about $3,000.

The "dope" which is being offered is "No. 4 heroin", the final processed form in which it is shipped to the U.S. (Heroin consumed in Southeast Asia is mostly "No. 3 heroin", a less refined, lower purity heroin. It is typically smoked.)

In response to a question from Mr. Packard, DEA indicated that the No. 4 heroin which moves through Chiang Mai, regardless of the country of heroin, is of fairly consistent purity: about 90 percent.

Mr. Mann reported that while single kilo body packs are still common, heroin is also now going out of Thailand in much larger shipments than heretofore. Some such loads are now going out in containerized cargo. Last year Thai Customs intercepted a shipment of 1,086 kilograms (approximately 2.4 U.S. tons) bound for the United States.

Mr. Warobec stated that heroin shipments are also going out of South Thailand by sea to Hong Kong.

On the question of security for U.S. personnel, DEA reported that there have been some threats communicated against U.S. personnel in recent months. The situation is not deemed so serious as to preclude the presence of agents' dependents in Chiang Mai.

The delegation was told that although a local agent of the NAU united was killed two years ago, armed resistance is very rare. When labs are "busted", those operating them typically flee the scene.

Mr. Hughes inquired concerning the source of chemicals used in processing heroin in the region, and on the success of the "chemical free zone" declared by Thailand for the northern provinces a few years ago.

DEA replied that for labs in Burma near Chiang Mai, the chemicals came from Thailand. For those near to China, from China. DEA also reported that there are increased amounts of chemicals coming into the region from India.

Mr. Mann also said that there are chemical checkpoints all over the area, but that the Thais are not having much success with spot checks.

II. NARCOTICS ASSISTANCE UNIT (NAU)

The NAU has been operating in Thailand since the early 1970's. During this time, it has provided Thailand $39.4 million in anti-narcotics assistance.

The NAU has two main projects in Thailand, each funded at about $1.5 million this year. One is a law enforcement project, the focus of which is to improve institutional law enforcement in Thailand. NAU tries to complement DEA, such as by providing equipment to police units with which DEA is working. The second is a crop control project. It was noted that Thailand has been working on crop control since the 1960's. They have operated a "push-pull" system of area development and alternative crops.

They have, however, come to the realization that an "incentives only" approach will not be effective, and in recent years have been carrying out mandatory destruction of crops when farmers persist in growing opium after being offered alternatives.

Our NAU reports that opium production in Thailand was about 18,000 hectares in the early 1970's. (A hectare is about 2.5 acres.) As a result of crop substitution efforts, production stabilized at about 9,000 hectares in the early 1980's. Thailand began crop eradication in 1984-1985; following this, production dropped to about 4 to 5 thousand hectares, and has stabilized at about this figure.

The NAU reports that "the last 25 percent is harder than the first 25 percent to eradicate". Farmers have learned how to beat the system -- they plant smaller plots, move them further away from population centers, stagger their crops, etc. Eradication efforts have been especially effective against marijuana. Five hundred tons were eradicated last year, and growth is substantially off since then. The NAU gives two reasons for this drop in planting: (1) marijuana is grown in larger fields, and is easy to spot; and (2) growers can relocate in nearby Laos or Cambodia with impunity.

NAU assistance is also going to help Thailand with capital improvements which it would not otherwise be able to make. This includes computers to give the Narcotics Control Board on-line access to immigration data, and on-line communication capability between border stations and the ONCB in Bangkok.

A third area of U.S. interest is in bringing about legal reform in Thailand. In this regard, the U.S. is encouraging Thailand to enact conspiracy and asset forfeiture laws, and to ratify the legal assistance agreement pending with the U.S.

Congressman Hughes inquired how the NAU's report of success in reducing opium production in Thailand can be reconciled with the recent State Department Narcotics Control Strategy Report, which includes a predicted increase in Thai opium production from 30 tons last season to 50 tons this season.

Mr. Retka explained that this increase reflects an upward change in the estimated yield per hectare in cultivation. He said these production figures are still being researched and analyzed by ONCB, and that a final figure has not been arrived as yet. He was also asked about the attitude of the King of Thailand regarding eradication. He indicated that the King's previous position in opposition to involuntary eradication has changed.

After 20 years of offering alternative crops but not insisting on eradication of opium crops, the Thais acknowledged that many farmers were growing both. The new attitude is that the "plants are fair game, but the planters are not," meaning that eradication may proceed, but must be carried out without violence.

MEETING: Country Team Briefing (Situation in Hong Kong)

DATE: August 14, 1989

KEY OFFICIALS: U.S. Consular Officials in Hong Kong, including:

Donald M. Anderson
Consul General

Gilbert Donahue, Chief
Political/Economic Section

Gerard Pascua
Political Economic Officer

John Adams, Chief
Consular Section

James Harris
Drug Enforcement Administration

BACKGROUND AND DISCUSSION:

Consular officials briefed the CODEL on: 1) the political situation in Hong Kong, particularly the impact of recent events in China on Hong Kong's political and economic future, and 2) issues likely to arise at meetings with local British and Chinese government officials later in the morning of August 14.

Mr. Pasqua described the ongoing legal discussions on the political future of Hong Kong between the governments of China and Great Britain. In the joint PRC/British declaration of 1984, Hong Kong was guaranteed an autonomous future after 1997 -- the date of its absorption into China. Hong Kong was promised fiscal autonomy, its own currency, no central taxes, and freedom of religion. Nevertheless, the political future of Hong Kong remains uncertain. The "basic law" which will govern Hong Kong after 1997 is still under discussion, with talks between the PRC and Britain set to resume in late September, 1989. China has already announced its intention to conclude drafting of the basic law during the spring of 1990, with enactment by the National People's Congress later that year.

The overarching question in Hong Kong, of course, is confidence in the intent of the PRC to follow through on the provisions and spirit of the Joint Declaration of 1984. The people of Hong Kong were traumatized by the events of June 4 in Tienanmen Square. As a result of eroded confidence, it is expected that emigration from Hong Kong will be heavy in the years leading up to 1997. The problem for Hong Kong residents is sanctuary. Great Britain has given no guarantees to Hong Kong that it will step up immigration quotas, and there are many in Hong Kong looking for assurances that Great Britain (or some combination of Britain EC countries, and the U.S.) would be available as a sanctuary of last resort if events in Hong Kong turn sour.

According to Pasqua, the two major issues facing Hong Kong in the "basic law" discussions are: 1) deployment of People's Liberation Army troops in Hong Kong after 1997, and 2) conditions under which China might declare a state of emergency in Hong Kong after 1997. On the issue of self-determination in Hong Kong prior to 1997, Pasqua stated that some Hong Kong residents would like to see free, representative elections prior to 1997 (to give Hong Kong some practice in self-determination), but that most residents would prefer to retain the current consultative arrangement.

Mr. Donohue provided an economic overview of Hong Kong. The economy has evolved from one centered, in the 1950's, around toys and textiles to today's service economy. Of course, Hong Kong continues to be a major trans-shipment center for the entire Pacific Rim. A significant factor in the economy of Hong Kong is the PRC, both as a source of investment (Bank of China) and as a source of cheap labor for Hong Kong manufacturing companies, who employ more PRC residents than Hong Kong residents. It is clear that the economic future of Hong Kong lies with decisions taken in Beijing.

Hong Kong's move into services is a reflection of the fact that escalating salaries are pricing Hong Kong out of competitive manufacturing. Basic international business services -- accounting, telecommunications, law, banking -- have boomed in recent years, but are threatened by emigration of skilled personnel. There has also been a very large movement of capital out of Hong Kong since June -- perhaps as much as $4 billion. Most of the capital has moved to North America, particularly Canada, where immigration laws are more favorable to Hong Kong residents than those of the United States.

In the long run, Donohue is optimistic about the economic future of Hong Kong. Infrastructure, especially the container port, is modern and first-rate. Investment from Japan, China, and the U.S. continues to be strong, and growth has surpassed ten percent for several years. Ultimately, there is no real alternative to Hong Kong in the Pacific Rim -- that is, there is no place with comparable legal traditions, communications, market proximity, and economic flexibility.

Mr. Mineta discussed his proposal to increase U.S. immigration quotas for Hong Kong from 5,000/year to 20,000/year (three years ago, the colonial quota for Hong Kong was raised from 600 to 5,000/year), and asked what the U.S. is doing to bring pressure to bear on the U.K. to offer sanctuary to Hong Kong residents. Consular staff stated the U.K. position -- that Great Britain has significant problems today with its own immigrant populations, and will therefore only open up immigration for senior Hong Kong civil servants. The U.S. has done little to pressure the U.K. on this point. Mr. Mineta also asked about enforcement of weight limits on containerized shipping, so that U.S. road limits are not exceeded. The question led to a discussion of who should be responsible for meeting U.S. road standards -- the shipper, the secondary shipper in the U.S., or the consignee.

Mr. Scheuer asked about the prospects for an international agreement among the developed nations to apportion immigration quotas for Hong Kong residents who wish to leave either prior to or after 1997. Consular officials stated that the object of current policy is not to encourage emigration, but to encourage residents to stay in Hong Kong, and that such an agreement would only serve to encourage and increase emigration. The problem with the official approach, of course, is deciding on an appropriate trigger -- that is, on a point when events are so bad that emigration should in fact be encouraged.

Mr. Hughes raised the issue of bank secrecy laws, which make it extremely difficult to trace the laundering of money from drug transactions. With the recent switch to heroin #4 in the U.S., and with other changes in the international heroin trade, Hong Kong has become an increasingly important trans-shipment point for heroin in recent years. Mr. Harris stated that although more needs to be done, the past 18 months have seen a number of successful anti-drug efforts in Hong Kong. Three major drug organizations have been knocked out, cooperation with the PRC has been secured, and Hong Kong has passed an Asset Recovery Act to allow seizures of drug-related assets following conviction.

MEETING: Country Team Briefing (Situation in China)

DATE: August 14, 1989

KEY OFFICIALS: U.S. Embassy/Beijing Officials, including:

Richard Holmes
Political Counselor

Bill Thomas
Science Counselor

BACKGROUND AND DISCUSSION:

Two Embassy officials from Beijing traveled to Hong Kong to brief the CODEL on the current political, economic, and S&T situation in China. Both officials are extremely experienced in dealing with China. Mr. Holmes has been a political officer in Beijing for the four years, and Mr. Thomas was most recently the Consul General in Chengdu, China.

Economic Relations. Total U.S./China trade more than doubled from 1984 to 1988, from $6.4 billion to $14.3 billion. In 1988, U.S. exports totalled $5.03 billion and imports $9.27 billion. Major U.S. exports include machinery, wheat, plastics, wood, fertilizers, aircraft, and chemicals; major imports include apparel, toys, and consumer electronics. U.S. investment in China since 1979 is roughly $2.6 billion in a total of 550 ventures. The largest include Occidental, Chevron, Texaco, Xerox, Chrysler, Babcock and Wilcox, Hewlett Packard, Otis, General Electric, MacDonnell-Douglas, Warner-Lambert, Coca-Cola, Heinz, R.J. Reynolds, and Squibb.

The largest trading partners with the PRC include Hong Kong (35%), Japan (18%), EEC (14%), U.S. (10%), and the ASEAN countries (8%). However, much of the Hong Kong trade is immediately re-exported to other countries, including the United States. When adjustments are made for this re-export, the U.S. closely follows Japan as the PRC's largest trading partner (22% versus 21%), and the U.S. becomes the largest single importer of PRC goods. The U.S. is also the second largest investor in China, trailing only Hong Kong.

Even had the events in Tiananmen Square not occurred, U.S./China trade was due for a slowdown in 1989, due to inflation, deficit spending, and the general economic slowdown in China. Because of the events of early June, however, the impact on trade and investment will be severe. Investors have lost confidence in China. Hong Kong is particularly nervous in light of statements by PRC officials that China may renege on its promise to preserve Hong Kong's capitalist system until the year 2047. The average U.S. investment in China to date has only been $5 million per company, which indicates that many U.S. companies were in the midst of a 4-5 year experiment to see if they could conduct business in China. Many were poised for major investments -- investments which will not occur now because of Tiananmen. Even though some U.S. companies have re-entered China, no one is looking at new investments or joint ventures at this time. Although the Chinese government is saying "come back, all is normal", the argument does not wash with the business community. In two-way trade, it is predicted that U.S. exports will decline sharply due to China's hard-currency problems, and that U.S. imports will remain stable in the short-term but decline in the long-term as U.S. importers begin to look for more stable suppliers than the PRC.

The Embassy officials cautioned against further economic sanctions, such as suspension of OPIC insurance, the Trade Development Program, or Most-Favored-Nation (MFN) status. Sanctions are already hurting the Chinese government and the Chinese people. For example, the decline in income from tourism ($2.2 billion in 1988) has led to a 25 percent cut in income for those working in tourism. Unilateral U.S. economic sanctions would only help Japan and Korea, who are already moving back into China in an attempt to secure favorable terms in a variety of business ventures. They would also give PRC hardliners an opportunity to use the U.S. as a scapegoat, and would invite retaliation for U.S. exports. Suspension of MFN status would also devastate the economy of Hong Kong, which is highly dependent on U.S./China trade.

S&T Relations. The major bilateral S&T issue involves re-negotiation of the five-year umbrella agreement in science and technology, which was extended temporarily after its expiration in January, 1989. Talks continued through the first six months of 1989 (largely on the issue of intellectual property rights), but have been suspended as a result of the massacre in Tiananmen Square.

Since the first U.S./China umbrella agreement was signed in 1979, more than 500 new joint projects have been initiated under 29 different protocols, and thousands of persons have been exchanged in each direction. For both the U.S. and China, the program represents the largest such arrangement with any other country. Each country has benefited from the cooperative programs, albeit in different ways. China's benefits have been primarily in the form of enhanced training opportunities for its scientists and engineers, as well as access to advanced equipment and technology. Americans have in turn been able to carry out research in some unique areas previously closed to foreigners, have received access to extensive historical records dealing with natural phenomena such as earthquakes and floods, and have benefited from state-of-the-art Chinese research in such areas as health and agriculture.

Prospects for renewed discussions leading to a long-term S&T protocol are murky. It is almost certain that the high-level talks scheduled for October, 1989 will be cancelled in light of continuing U.S. government sanctions in response to the massacre in Tiananmen Square.

The response of the scientific community itself to Tiananmen Square is mixed. Many meetings scheduled to be held in China this summer and fall have been cancelled, some as a show of protest. The National Academy of Sciences has taken the toughest stand among the major groups engaged in joint programs in China, suspending all of its activities. U.S. government agency activities, on the other hand, are in a state of suspended animation, and individual exchanges will probably be renewed as soon as the travel advisory to China is lifted.

In the space area, very little cooperation is presently occurring between the U.S. and China. The two countries have discussed a protocol in space cooperation for the past four years, but progress has been slow due to a variety of factors (Chinese bureaucracy, the CHALLENGER accident, a lack of commitment by NASA, IPR, and concerns by the Department of Defense). In any event, a space protocol must await renegotiation of the overall S&T agreement.

MEETING: Hong Kong Government Officials

DATE: August 14, 1989

KEY OFFICIALS: Roderick Bunten
Assistant Political Adviser
Hong Kong Government

Michael Hanson
Refugee Coordinator
Hong Kong Government

Poon Chung Kwong
Legislative Councillor
Member, Basic Law Consultative Committee
Dean, Faculty of Science, Hong Kong University

[redacted]GROUND:

Mr. Bunten is a representative of the British governor in Hong Kong, while Mr. Poon is an elected Member of the Hong Kong Legislative Council representing a local Chinese constituency.

Hong Kong consists of Hong Kong Island, Stonecutters Island, the Kowloon Peninsula, and the New Territories. This conglomerate currently carries the status of a British Crown Colony. In 1841, the island of Hong Kong was ceded to Great Britain by China in an attempted settlement of the First Opium War. Kowloon was ceded in 1860 at the end of the Second Anglo-Chinese War. In 1898, the New Territories were leased to Great Britain by China for 99 years.

Hong Kong is headed by a British Governor appointed by the Queen. The highest consultative body in the colony is the Executive Council, which has 15 members including the Governor. The Council deals with all major policy decisions, appeals, and petitions. Acts of Parliament do not apply to Hong Kong unless specifically stated in the law.

A Legislative Council approves the budget and all territorial laws. Until 1985, all Council members were appointed. Since then vacancies are filled by election.

Since the establishment of the Communist regime in China in 1949, Beijing has considered regaining sovereignty over Hong Kong as a primary national objective. The recent Sino-British negotiations began after a visit to Beijing by British Prime Minister Margaret Thatcher in 1982, and concluded with the signing of the Sino-British Joint Declaration in 1984. The terms of the Declaration stipulate:

.. British sovereignty and jurisdiction over Hong Kong will continue until July 1, 1997.

.. On July 1, 1997, Hong Kong will become a Special Administrative Region (SAR) of the People's Republic of China.

.. For fifty years thereafter, China's socialist system and policies will not be practiced in the SAR.

.. SAR Hong Kong will have its own government and legislature composed of local inhabitants and function with a high degree of autonomy.

.. The Central People's Government will be responsible for Hong Kong's foreign affairs and defense.

DISCOSSION:

It was the 1898 treaty between Great Britain and China, leasing the New Territories to Great Britain for 99 years, that actually precipitated the discussions in the early 1980's that led to the 1984 agreement between the United Kingdom and China on Hong Kong's future.

The 99 year lease stipulation prohibited the British Government from granting leases on Hong Kong land beyond the June 30, 1997. This legal roadblock along with a number of political issues led to an increasing sense of uncertainty in Hong Kong about its future.

The context for understanding both Hong Kong's future autonomy from and future dependency on China must be viewed not only in terms of the specific provisions of the 1984 agreement but also in terms of the complex interdependency of the Hong Kong and Chinese economies. For example, China is Hong Kong's biggest trading partner; Hong Kong receives over 50% of its water from China; Hong Kong provides 30% of China's foreign exchange; China is the largest investor in Hong Kong; China is the largest provider of food for Hong Kong; and there are more people employed by Hong Kong companies located in China than there are people employed by Hong Kong companies in Hong Kong.

HONG KONG AND THE IMMIGRATION PROBLEM

In a period of 40 years, Hong Kong's population went from 600,000 to 5.6 million. Hong Kong has a population density of about 5,500 people per square kilometer, while the United States has a population density of about 222 people per square kilometer. These immense population pressures are escalating with problems of illegal immigration from China and more recently from Vietnam.

The current Vietnamese population in Hong Kong is about 53,000, of whom 18,000 arrived during 1988. Most come from the far north of Vietnam, primarily from the coastal strip next to the Chinese border.

According to Refugee Coordinator Michael Hanson, these immigrants from Vietnam have no desire to remain in Hong Kong. Their goal is not to establish permanent residence or asylum there but rather to be resettled somewhere in the West. Destinations of preference are Australia, Canada, the U.S., or Western Europe.

Since neither the United States nor the international community in general considers these people refugees because they are fleeing poverty rather than persecution, there is no recourse other than to repatriate them to Vietnam.

There is now an agreement between the Vietnamese government and the United Nations for "voluntary repatriation". The Vietnamese government will waive all criminal sanctions against those returning unless they have committed a serious crime.

Professor Poon underscored the seriousness of the Vietnam immigrant issue by identifying it as the single most pressing issue currently facing Hong Kong. He described a litany of social problems resulting from Vietnamese immigrants escaping from the detention centers, and robbing food and other items from the neighboring farms. According to Dr. Poon, the ongoing influx of Vietnamese has tried the patience and goodwill of the local people to the very limit. In addition, the manpower of the disciplinary forces has been fully stretched to provide adequate management in the detention centers.

Since the Geneva Conference on Indo-China Refugees in 1979, Hong Kong has provided first asylum to over 130,000 Vietnamese boat people at a cost of approximately $2 billion. The increasing reluctance of resettlement countries to accept the Vietnamese immigrants coupled with the escalation of their entry into Hong Kong has created major social, political, and economic pressures.

In June of 1988, Hong Kong initiated a screening policy for all Vietnamese boat people upon arrival to determine whether or not they qualify for refugee status. This screening process is conducted in accordance with international practice and is monitored by a U.N. commissioner for refugees.

Despite the introduction of the screening process, the growing influx of Vietnamese has continued. An International Conference on Indochina Refugees held in Geneva in June of 1989 resulted in a Comprehensive Plan of Action for the expected resettlement of all Vietnamese refugees in Hong Kong within three years but has fallen short of any agreement on mandatory repatriation.

Professor Poon described the Vietnamese Boat People problem as an international issue and suggested that part of the permanent solution must be for the international community to help the Vietnamese government reconstruct its war-torn economy.

In the discussion that followed Dr. Poon's presentation of the refugee issue, the group explored the possibility of a joint international plan to divide up the 53,000 Vietnamese in Hong Kong among several Western nations. The discussion languished on the grim prospect that no country seemed anxious to take them in.

Professor Poon reminded the participants that because Hong Kong is not an independent country it has no autonomous status to negotiate these issues with the Vietnamese government. The negotiations are conducted by the United Kingdom, as the sovereign state, for international purposes.

Since 1985, a committee of 59 members, 23 of whom are from Hong Kong, have been working on a Basic Law for Hong Kong which will be the guiding document of governance for the SAR. The work is progressing in a series of drafts. It has already been agreed that during the period of transition to 1997, Hong Kong will continue to participate in the GATT, the Asian Development Bank, and the International Labor Organization.

RECENT POLITICAL EVENTS AND HONG KONG'S FUTURE

The recent political upheaval in China has come in the midst of the delicate evolution of Hong Kong's status from British Crown Colony to Special Administrative Region of the People's Republic of China. Hong Kong's predominately ethnic Chinese population reacted in strong protest to the crackdown on political dissenters in China, and since then has been seriously concerned about the implications of the events in China on its own future.

Sentiment has been running high in Hong Kong that Britain is leaving the colony in an untenable situation -- that is, caught between the U.K.'s refusal to consider the guarantee of British citizenship to the millions in Hong Kong (which would permit them the right of abode in Britain) and the grim prospect of China not living up to its agreement of autonomy, capitalism, and democracy for Hong Kong.

APPENDIX I

PRESS
DEPARTMENT OF STATI

PR NO. 123
June 26, 1989

ADDRESS BY
THE HONORABLE JAMES A. BAKER, III
SECRETARY OF STATE
ON
"A NEW PACIFIC PARTNERSHIP:
FRAMEWORK FOR THE FUTURE"
BEFORE
THE ASIA SOCIETY
JUNE 26, 1989

Thank you for that introduction, and I am honored to be here. I am especially happy to appear before the Asia Society in the company of Japan's Foreign Minister, Hiroshi Mitsuzuka. As the representative of a great democracy, the Foreign Minister understands, as we all do, that a free government depends upon well-informed citizens who are active in public affairs. The Asia Society can therefore reflect with pride upon its contribution to America's understanding of East Asia and the Pacific Rim. Each one of you, by participating in the Society, makes a unique contribution to our national interest.

Our understanding of events in Asia and the Pacific has become all the more important because the post-war era is over. In Asia, as in Europe, a new order is taking shape. While the rites of passage will be painful -- China proves that -- it is an order full of promise and hope. I believe strongly that the United States, with its regional friends, must play a crucial role in designing its architecture.

There are major challenges to be met as the new order emerges. In Asia and the Pacific, as elsewhere in the world, the demand for democracy is the most vital political fact of our time. The Philippines and South Korea have made the transition to free government. But, as we have seen to our sorrow last year in Burma and more recently in China, there are no guarantees of progress.

For further information contact:

Another challenge stems from the very fact of the Pacific Rim's economic success. Economic achievements carry new responsibilities. Explosive growth has been accompanied by imbalances that threaten the integrity of the open trading system.

Finally, we continue to face security challenges. Conflict continues in Indochina. And on the Korean Peninsula, there remains a heavily armed stand-off. Elsewhere in Asia, the post-war security arrangements are being strained by economic constraints, changing threats and rising nationalism. Yet without a regional consensus on defense, all other achievements will be put in doubt.

The Pacific region is clearly of great and growing importance to the United States. That is why President Bush and Vice-President Quayle visited Asia within the first hundred days of the new Administration. In a few days, I will be travelling to Tokyo to meet with other donors to the Philippines Multilateral Assistance Initiative. Then, I'll go on to Brunei to meet my colleagues in ASEAN, one of the Pacific's most constructive regional organizations.

The purpose of my trip is to establish the framework for a new Pacific partnership. To build that new partnership, we need continued American engagement in the region's politics, commerce and security. We need a more creative sharing of global responsibilities with Japan. And we also need a new mechanism to increase economic cooperation throughout the Pacific Rim.

Elements of the New Partnership: American Engagement

The foundation of the new Pacific partnership must be the engagement of the United States. President Bush has declared rightfully that America is a European power and will remain one. America is also a Pacific power. And we will remain one.

The stakes are great. In 1988, for example, our transpacific trade totalled $271 billion, far exceeding our transatlantic commerce of $186 billion. U.S. trade with East Asia has more than doubled since 1982.

Eight of our top 20 export markets are now in the Pacific. U.S. investment there, exceeding $33 billion, accounts for 23% of all overseas profits earned by U.S. corporations.

The prosperity of the Pacific, however, depends upon the peace of the Pacific. For four decades, the United States has provided a framework of security that has permitted the region to prosper. America's forward-deployed deterrent remains more essential than ever to the security of the Pacific. And, as we demonstrated through the Treaty abolishing intermediate range nuclear forces, we will not seek to improve the security of another region at Asia's expense.

Today, our allies are stronger and more prosperous than ever. And, there may be new opportunities to reduce both political tensions and threatening military capabilities.

Surely we will be able to find creative, new ways to assure our mutual defense. Just as surely, we must avoid false complacency. We have fought three major wars in East Asia in the past forty-five years. Neither we nor our allies want to fight another.

I think that the facts are clear and the conclusions inescapable. America's unique political, economic and military capabilities provide the foundation for a prosperous and secure Pacific. And that foundation can be strengthened further through improved regional partnerships that reflect the achievements of our friends and allies.

The U.S.-Japan Global Partnership

Among those relationships in the Pacific, none is more important to the region or the world than our alliance with Japan.

Over the past decade, that alliance has experienced a fundamental change. Japan has become a world power. We applaud this achievement which holds so much promise for the future. But to make the most of that promise, the United States and Japan must build a new and truly global partnership.

The foundations for that global partnership are now being laid:

> Japan is shouldering more of the mutual defense burden and provides 40% of the cost of stationing U.S. forces in-country.
>
> The recently concluded FSX fighter co-development project is an important advance as we strengthen our cooperation in defense and technology.
>
> Japan will soon be the largest donor of overseas development assistance. Its role in the Philippines Assistance Initiative offers a prime example of the good Japan can do in bolstering emerging democracies and sharing responsibilities.
>
> Finally, Japan has offered to help in alleviating the international debt problem.

There are, of course, other issues that will find their way onto the agenda of a global partnership, including environmental protection and international peacekeeping. But the message is clear.

The time has arrived for Japan to translate its domestic and regional successes more fully into a broader international role with increased responsibility. And I am glad to say here today to my Japanese colleague, Foreign Minister Mitsuzuka, that I look forward to a new closeness of coordination with Japan.

This expanding relationship will require a transformation of outlook and policy in both our countries. That is already evident in the area of trade, where our bilateral relationship continues to be troubled. Prime Minister Uno himself put it best when, in his first major speech to the Diet, he urged Japan to "embark upon rectifying those institutions and practices that are objectively viewed as unfair." Though we have seen some progress in the trade area, the full opening of Japanese markets must still be achieved. And at the same time, we look forward to the full implementation of the structural reforms advocated by the Maekawa Report.

We and Japan must recognize how interconnected we really are. That is why we are looking to begin a structural economic initiative. Its purpose is to identify, on both sides, impediments to the reduction of economic imbalances -- and to develop action plans to remove them.

Change will be required of the United States, not just of the Japanese. That is why President Bush is determined to put our American house in better order -- to improve our education, to sharpen our competitiveness, to reduce the trade and budget deficits that weigh so heavily on our economy. And we will continue to oppose the protectionist pressures that menace the world trading systems. The challenge of structural change is not Japan's alone.

Pacific Economic Cooperation

Let me turn now to the next part of the framework -- a new mechanism to increase economic cooperation throughout the Pacific. Last year intra-Asian trade approached $200 billion, reflecting the rapid pace of Pacific Rim economic integration. Yet unlike Europe, there are inadequate regional mechanisms to deal with the effects of interdependence. Many distinguished statesmen and influential organizations have suggested ways to fill the gap-- among them Australian Prime Minister Hawke and MITI during the time Hiroshi Mitsuzuka headed it. All their suggestions share the objective of improving economic cooperation and offering a regional forum to discuss a range of common problems.

Clearly, the need for a new mechanism for multilateral cooperation among the nations of the Pacific Rim is an idea whose time has come.

Our involvement in the creation of this new institution will signal our full and ongoing engagement in the region.

And by furthering the development and integration of market economies within the international system, we strengthen the collective force of those that share our principles.

I want to explore the possibilities for such a mechanism in detail during my trip. The United States will not offer a definitive blueprint. We will be looking instead for a consensus, drawing on the best elements from various plans. This new mechanism should be based on the following key principles:

First, any mechanism should encompass a wide array of issues, extending from trade and economic affairs to issues such as cultural exchange and the protection of the Pacific region's natural resources. As such, it would embody what the President has called "creative responsibility sharing," meaning that each government should act commensurate with its resources and capabilities. All our economies have benefited from the world trading system and all should act commensurate with their resources and capabilities to help strengthen it.

Second, any Pacific-wide institution must be an inclusive entity that expands trade and investment. It must help, not hinder, already existing efforts, such as the Uruguay Round of GATT, the OECD, or a regional group, such as ASEAN. It should be based on a commitment by market economies to facilitate the free flow of goods, services, capital, technology and ideas.

Third, a pan-Pacific entity should recognize the diversity of social and economic systems and differing levels of development in the region. At the same time, we should recognize that private initiative and free market policies offer the best route for individual opportunity and higher living standards.

Today, Minister Mitsuzuka and I talked about the possibility of such a new entity. And I will be discussing how we can create this new mechanism when I see Prime Minister Hawke this week and our ASEAN friends next week. If a consensus can be reached, we would support the Prime Minister's call for a ministerial meeting this fall as a first step toward developing such a new Pacific institution.

Constructive Relations with China

Full American engagement, a global partnership with Japan and a new political mechanism for Pacific economic cooperation are critical pieces in the puzzle of Asia's future. But that future will be incomplete without China. And today, more than ever, China casts a long shadow over the Pacific.

China had made great economic strides. Per capita income doubled in a decade. An open window to Western trade, technology and investment was an essential part of reform. To sum it up, if I can, China had decided to join in regional progress rather than remain isolated from it.

History shows, however, that economic and political reform are but two sides of the same coin. Now it has become all too evident that the pace of political change in China did not match the aspirations of the Chinese people.

The President has condemned in the strongest terms the brutal events of this past month. We and other nations have suspended business as usual. But we and the rest of the world must not let our revulsion at this repression blind us to the pressures for reform.

China has suffered a tragic setback but the story is not over. As the President said, "the process of democratization in communist countries will not be a smooth one and we must react to setbacks in a way that stimulates rather than stifles progress."

That is why we have acted in a measured way. The hasty dismantling of a constructive US-Chinese relationship built up so carefully over two decades would serve neither our interests nor those of the Chinese people. Above all, it would not help those aspirations for democracy that were so obvious in the millions who marched to support the students in Tiananmen Square.

Having said that, let me be clear: the United States government and its people will stand for the democratic values we hold dear. China's current leadership may have cleared the Square. They cannot clear the conscience. China's rendezvous with freedom, like its rendezvous with the advancing nations of the Pacific, cannot be long delayed. We will be there to help when the day follows the night.

Conflict in the Pacific

Finally, we and the entire region must deal with the remaining major conflicts that threaten peace: the Korean Peninsula and Indochina.

I must note with regret that the North Korean regime has yet to abandon its self-imposed isolation or its pressure tactics intended to destabilize the Republic of Korea. We will continue to probe for hints of progress in reducing tensions between North and South, looking for signs of a willingness to engage in greater glasnost' and military transparency. Our policy is to facilitate reconciliation through dialogue with all concerned parties, above all through direct talks between South and North.

We will maintain fully our security commitment to Korea to facilitate such progress and prevent armed conflict.

In Cambodia, the shooting continues and the danger of renewed civil war is real. Hanoi's announced intention to withdraw its troops by the end of September has accelerated efforts towards a negotiated settlement. Our principal objectives are to bring about a verified Vietnamese withdrawal, to prevent a return to power of the Khmer Rouge, and to provide the Cambodian people a genuine opportunity for self-determination.

We believe a comprehensive agreement, backed by a credible international presence under U.N. auspices, is the best way to achieve these goals.

We believe that Prince Sihanouk's leadership is essential to the process of creating an independent Cambodia at peace with itself. That is why we have asked Congress to authorize additional aid to the non-Communist Resistance. Such aid will strengthen the Prince's position in the political process now underway and increase the prospects for a settlement which can ensure that the Khmer Rouge never again take power.

As we examine the possibilities of resolving the remaining Pacific conflicts, I want to note here some new developments in Soviet policy. For much of the post-war era, Soviet actions in Asia could only be described as ominous. Moscow has deployed a formidable military presence able to project naval and air power well into the Pacific.

Three years ago, at Vladivostok, General Secretary Gorbachev announced a new approach to Soviet interests in Asia. After easing Sino-Soviet border tensions, withdrawing Soviet troops from Afghanistan and influencing Vietnamese restraint, Mr. Gorbachev was able recently to visit Beijing. President Bush welcomed this development. It confirms that a constructive Soviet approach is possible if Moscow changes its policy of military intimidation and support for aggression.

Now, it is time for new Soviet deeds to match new Soviet thinking. Let Moscow end its occupation of Japan's northern territories. Let Vladivostok become an open port, as Mr. Gorbachev proposed three years ago. Let special economic zones bloom in the Soviet Far East, as Mr. Gorbachev suggested a year ago. Let the Soviet Union cooperate in resolving the tensions and hostilities in Korea and Cambodia.

Conclusion

A political philosopher once wrote that "there is nothing more difficult to take in hand, more perilous to conduct, more uncertain in its success, than to take the lead in the introduction of a new order of things." Yet today in the Pacific and East Asia, as in Europe, we face the inescapable challenge of building a new order.

There are perils. There will be difficulties. Yet I believe that despite these uncertainties, the rewards of a free, prosperous and secure Pacific are within our reach.

That calls for a new Pacific partnership, based on a global sharing of responsibilities with Japan. We also need a new political mechanism to enhance economic cooperation in the Pacific Rim. And we need to address the points of conflict that still threaten the peace of the Pacific.

Let me close on this note. I believe that ultimately what beckons us to our Pacific destiny goes beyond the reckoning of material interests. It is the idea of a creative harmony, the product of many different nations, each with its own approach but drawn together around certain principles. It is the faith that we can create a Pacific community reaching out to the rest of the world. It is, in short, the belief that free peoples, working together, can emancipate our region at last from historic burdens of poverty and conflict. That is our vision, to which we this day dedicate our new Pacific partnership.

Thank you.

22-653 - 89 - 3

Thais Divided On Copyrights; Seoul Will Act

By P.T. BANGSBERG
Journal of Commerce Staff

HONG KONG — The government of Thailand is split over intellectual property protection, which is the major irritant in the country's relations with the United States, its principal trading partner.

Meanwhile, South Korea announced a new drive to stamp out copyright and trademark violations in order to reduce trade frictions with Washington.

Thailand's foreign trade has been blossoming, as has its economy generally. But U.S. annoyance over lax protection of intellectual property is casting a shadow over Thailand's otherwise sunny economic prospects, in a year when bilateral Thai-U.S. trade could top $6 billion.

The government's Commercial Registration Department, which deals directly with such matters, is urging the cabinet to make a swift decision on implementing protection for computer software.

Software, the instructions that make computers perform useful tasks, and pharmaceutical patents are among the most sensitive issues in Thai-U.S. relations.

The Thai government has resisted introducing protection for either. It is a coalition and is frequently split on policy issues among its partners.

Sukhon Kanchanalai, director-general of the registration department, said the recent adoption of a software protection code by the General Agreement on Tariffs and Trade, the international body that governs most world trade, leaves Thailand isolated.

Miss Sukhon, who led the Thai delegation to the GATT talks in Switzerland earlier this month, regretted its decision as a negative one for Thailand. But it left Thailand "at a dead end. It's time for the government to review its position," she said in Bangkok.

Much pirated computer software is freely available in Bangkok shops at a fraction of the American or European price. The popular Lotus 1-2-3 spreadsheet program, for example, is on sale at US$15, compared with around US$275 in the United States.

Thailand and Indonesia have

SEE COPYRIGHT, PAGE 4A

CONTINUED FROM PAGE 1A

taken over from Singapore, Hong Kong and even Taiwan as the region's counterfeit capitals.

In South Korea, government prosecutors said the drive to stamp out copyright and trademark violations will concentrate on computer disks, video cassettes and books.

People who "habitually" copy others' works "will in principle be arrested," an announcement said. Those selling such products "will not escape heavy punishment."

It did not spell out all the penalties but said a revocation of business licenses and additional taxes may be included.

Thailand has already suffered for its lax protection. As a warning shot earlier this year, Washington withdrew some duty-free privileges for Thailand's exports to the United States under the Generalized System of Preferences. More privileges could go if the problem isn't resolved.

Daniel O'Donohue, the American ambassador to Thailand, forecast over the weekend that bilateral trade could hit a record US$6 billion this year. It was just over US$5 billion last year, with Thailand enjoying a US$2 billion surplus.

The United States accounted for 20% of Thailand's overseas sales last year. American exports to Thailand grew 33% in the first four months of this year, he said, largely on a favorable exchange rate.

American companies are also the largest foreign investors in Thailand's booming economy, with direct commitments of some US$4 billion, the ambassador said. "U.S. business confidence (in Thailand) has never been higher," he said.

Some bilateral disputes, such as one over access to agricultural produce, have been resolved, but Mr. O'Donohue noted that computer software remains a thorn. He urged a timely resolution of such controversies, which "inevitably occur in any dynamic relationship."

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OFFICE OF THE UNITED STATES TRADE REPREENTATIVE
Washington, D.C.

EMBARGOED FOR RELEASE UNTIL
8:00 PM EDT THURSDAY, May 25, 1989

May 25, 1989

FACT SHEET

"SPECIAL 301" ON INTELLECTUAL PROPERTY

United States Trade Representative (USTR) Carla A. Hills announced today the action the Administration will take pursuant to the so-called "Special 301" intellectual property provisions of the Omnibus Trade and Competitiveness Act of 1988. Those provisions call for the development of an overall strategy to ensure adequate and effective protection of intellectual property rights.

The Special 301 authority was designed to enhance the Administration's ability to negotiate improvements in foreign intellectual property regimes through bilateral and/or multilateral initiatives. Specifically, the statute requires the USTR to identify those foreign countries denying protection of intellectual property rights and market access to U.S. firms relying on such protection, and to determine which of those countries are "priority countries," triggering an accelerated six month investigation. However, where countries are entering into, or making significant progress in, good faith negotiations, the USTR is precluded by the statute from identifying them as priority countries.

Because of significant progress made in various negotiations, the Administration has identified no "priority countries" under Special 301. Rather, the Administration has singled out 25 countries whose practices deserve special attention; 17 of those countries will be placed on a Watch List, while the remaining 8 trading partners will be placed on a Priority Watch List:

Brazil	Republic of Korea
India	Saudi Arabia
Mexico	Taiwan
People's Republic of China	Thailand

Action plans for resolving outstanding issues have been developed for each of the eight trading partners on the Priority Watch List; their status under Special 301 will again be reviewed no later than November 1, 1989.

The decision follows close consultations with key sectors of the U.S. business community that have been victimized by inadequate foreign intellectual property protection. They support this decision.

The announced action underscores the Congressional finding that international protection of intellectual property rights is vital to U.S. competitiveness. The denial of such protection is not only harmful to the economic interests of the United States, it undermines the creativity, invention and investment that are essential to economic and technological growth in all countries.

The Administration's plan reflects an understanding that countries may be at different stages in recognizing the importance of adequate and effective intellectual property protection. The economic interests of the United States also require it to attach greater priority to certain foreign markets. Many countries have already made progress as a result of bilateral negotiations and consultations. Others may be at an earlier stage of entering into negotiations. Nevertheless, expeditious improvements will be sought from all countries.

LEGAL DETERMINATIONS AND OTHER DECISIONS BY THE USTR UNDER SPECIAL 301

- The USTR, with the advice of the interagency Trade Policy Staff Committee, the Patent and Trademark Office, and the Copyright Office, reviewed the intellectual property regimes of, and market access provided by, U.S. trading partners.

- As a result of this extensive review, the USTR concluded that no foreign country currently meets every standard for adequate and effective intellectual property protection as set forth in the U.S. proposal on intellectual property tabled in the Uruguay Round.

- Thus the USTR has determined that all countries are eligible for potential priority designation based on the standards of the U.S. Uruguay Round proposal, because all countries "deny adequate and effective protection of intellectual property rights" within the meaning of the statute.

- Practices of particular concern have been communicated to each trading partner. Many of those practices were enumerated in the National Trade Estimate Report.

- The USTR further decided to establish a Watch List and a Priority Watch List of trading partners identified for further attention or scrutiny and action.

WATCH LIST

- The USTR decided that of all our trading partners, 17 countries should be placed on a Watch List for special attention (rather than be otherwise identified) because they

maintain intellectual property-related practices or barriers to market access that are of particular concern.

- Over the next year the United States will step up its efforts with these 17 Watch List countries to resolve problems associated with inadequate intellectual property protection or barriers to market access.

- Countries on the Watch List include:

Argentina	Indonesia	Portugal
Canada	Italy	Spain
Chile	Japan	Turkey
Colombia	Malaysia	Venezuela
Egypt	Pakistan	Yugoslavia
Greece	Philippines	

PRIORITY WATCH LIST

- Beyond the 17 countries on the Watch List, the USTR determined that the following eight trading partners maintain acts, policies, or practices that satisfy some or all of the statutory criteria for priority country identification. However, because they have made progress in recent bilateral or multilateral negotiations, they will not be identified as priority countries under the statute at this time:

Brazil	Republic of Korea
India	Saudi Arabia
Mexico	Taiwan
People's Republic of China	Thailand

- These eight trading partners have been placed on a Priority Watch List. Accelerated action plans for resolving any outstanding issues will be pursued with each of them over the next 150 days. Those plans are attached.

- The status of each of these eight trading partners under Special 301 will again be reviewed by no later than November 1, 1989, taking into account the extent to which the objectives of the accelerated action plans have been achieved.

RECENT PROGRESS ON INTELLECTUAL PROPERTY MATTERS

- In the course of carrying out the review under Special 301, the USTR noted that extensive U.S. efforts in recent years to obtain strengthened intellectual property protection around the world for relevant U.S. products had contributed

to substantial gains in a number of countries. The USTR also noted that the focus of these intellectual property efforts in trade negotiations coincided with the inclusion of provisions on intellectual property in various U.S. trade statutes. This statutory development began almost a decade ago with an amendment to section 301 in Senator Danforth's reciprocity bill which was enacted as part of the Trade and Tariff Act of 1984. The Omnibus Trade and Competitiveness Act of 1988's Special 301 provisions continued this Congressional priority, and its implementation has contributed positively to U.S. efforts to ensure adequate and effective intellectual property protection.

Some of these recent examples of strengthened intellectual property protection include:

1989

- The People's Republic of China commits to provide copyright protection for computer software (May)
- Colombia resolves royalty remission problem concerning motion pictures (May)
- Taiwan agrees to expeditiously resolve copyright problems concerning motion pictures (May)
- Saudi Arabia adopts a patent law (May)
- Bilateral Agreement on Copyright signed with Indonesia (April)
- Positive Uruguay Round mid-term review decision on intellectual property (April)
- Agreement reached to establish bilateral copyright relations with Taiwan (January)
- Chile submits proposed patent law amendments, including product patent protection for pharmaceuticals
- Indonesia submits a patent law, including product protection for pharmaceuticals

1988

- Republic of Korea establishes intellectual property enforcement task force
- Japan patent office introduces accelerated examination and appeal procedure
- Patent secrecy agreement with Japan
- Intellectual property annexes to Science and Technology agreements with Japan, the Soviet Union and Poland
- Brazil extends copyright protection to computer software
- Canada improves copyright law, enhancing penalties

1987

- Republic of Korea upgrades patent law, revises its copyright laws, passes computer program protection act,

and accedes to Universal Copyright Convention and Geneva Phonograms Convention
- Indonesia adopts copyright law
- Malaysia strengthens its copyright law
- Turkey adopts new law to control piracy of video and audio cassettes
- Mexico upgrades patent and trademark laws, including dropping trademark linking
- Singapore and U.S. establish bilateral copyright relations

1986

- Intellectual property included on Uruguay Round negotiating agenda at Punta del Este Ministerial
- Taiwan adopts new patent law
- Singapore adopts new copyright law
- Malaysia adopts new patent law

1985

- Taiwan revises copyright and trademark laws
- Japan provides protection for computer software under copyright

May 25, 1989

ACCELERATED ACTION PLANS FOR COUNTRIES ON THE PRIORITY WATCH LIST UNDER SPECIAL 301

Each trading partner on the Priority Watch List will be reviewed again no later than November 1, 1989 to determine whether it should be identified as a priority country under section 182(a)(2) of the Trade Act of 1974, as amended.

A country may be designated as a priority country at any time during the period and section 301 action initiated if statutory criteria are met, (e.g., if the country is no longer engaged in good faith negotiations or no longer making satisfactory progress).

A trading partner may be removed from the Priority Watch List at any time if U.S. objectives are accomplished.

The assessment of each trading partner over the 150-day period will be based, inter alia, on satisfactory progress and results in the following areas, taking into account the U.S. proposals on intellectual property in the Uruguay Round. The eight are:

BRAZIL:

- Improved and adequate patent protection for all classes of inventions
- Improved enforcement against piracy
- Elimination of local printing requirements for theatrical and television films
- Constructive participation in multilateral intellectual property negotiations

INDIA:

- Improved and adequate patent protection for all classes of inventions
- Elimination of discrimination against use of foreign trademarks
- Registration of service marks
- Effective protection of well-known marks
- Improved access and distribution for U.S. motion pictures
- Improved enforcement against piracy

- Conclusion of an intellectual property annex to the bilateral science and technology agreement

- Constructive participation in multilateral intellectual property negotiations

KOREA:

- Enforcement of Korea's patent, trademark, and copyright laws and administrative measures covered under U.S./Korean agreements, as measured by:

  1) Active and effective involvement of Korea's task force on intellectual property in enforcement efforts;

  2) Specific and effective actions by Korean enforcement entities; and

  3) Concrete evidence of decreased sales of pirated and counterfeit items.

- Constructive participation in multilateral intellectual property negotiations.

MEXICO:

- Improved and adequate patent protection for all classes of inventions, including accelerated phasing-in of product patent protection for inventions before they would otherwise be eligible for protection in 1997.

- Constructive participation in multilateral intellectual property negotiations.

PRC:

- Enactment of a copyright law, including copyright protection of software.

- Establishment of copyright relations with the United States.

- Improved and adequate patent protection for all classes of inventions.

SAUDI ARABIA:

- Enactment of a copyright law, including copyright protection for software and sound recordings.

- Establishment of copyright relations with the United States.

- Effective enforcement against piracy and counterfeiting of U.S. works.

TAIWAN:

- Enforcement of Taiwan's patent, copyright, and trademark laws as measured by:

  1) Specific and effective actions by Taiwanese enforcement entities;

  2) Concrete evidence of decreased sales of pirated and counterfeit items.

- Implementation of measures to fulfill obligations under the recently agreed bilateral copyright agreement and other bilateral intellectual property agreements.

THAILAND:

- Improved and adequate patent protection for all classes of inventions.

- Effective copyright protection for U.S. works, including software.

- Improved protection in Thailand of foreign trademarks

- Constructive participation in multilateral intellectual property negotiations.

APPENDIX II

National Journal, 7/1/89

TRADE REPORT

Kid Korea Grows Up

The United States has treated South Korea like a little brother, but now it's grown into an Asian power, and both countries are trying to adjust to new economic realities.

BY BRUCE STOKES

In the postwar era, the big brother-little brother relationship between the United States and South Korea has been marked, like all familial situations, by volatile disputes tempered by an enduring bond. Now, the little brother is coming of age, and though the fraternal ties aren't likely to be severed, they may never be the same.

America's alliance with Korea, long one of its most important, is entering a period of profound change. The recent settlement of several long-running trade disputes between the two countries—noteworthy more for the way the process worked than for the substance of the final agreement—suggests a maturing of the often-fractious ties between Washington and Seoul.

In the months ahead, the dimensions of this new relationship are likely to be severely tested and shaped by a series of economic struggles: over steel, telecommunications, agriculture and currency exchange rates. These squabbles will be complicated by differences over U.S. troop strength in South Korea, the progress of Korea's democratization and developments in the region, such as the turmoil in China. *(See box, p. 1686.)*

John Duricka

South Korean Deputy Prime Minister Soon Cho
"There is a great limit to the ability of Korean firms to adjust" to a changing economy.

How these tensions get resolved, and how U.S.-Korean relations fare in general, depend on the willingness of parties on both sides of the Pacific to accept the emerging economic realities of the 1990s. Korea must adapt internally, as it transforms itself into an advanced industrial economy, and externally, as it becomes a more important figure on the world economic and diplomatic stage. And the United States must recognize that the relative waning of its economic power dictates new arrangements not only with its heavyweight allies in Europe and Japan, but also with a host of ascending powers such as Korea.

U.S. ties with Korea "have reached a critical point," Lawrence B. Krause, economics professor at the Graduate School of International Relations and Pacific Studies at the University of California (San Diego), recently asserted. "The relationship is changing in three dimensions: economic, political and security," Krause said. "And to expect this to happen without tension would be silly."

"From the point of view of the United States," Korean Deputy Prime Minister Soon Cho said in a recent interview, "you have to recognize that the relationship between our two countries should be a two-

way traffic, not the one-way traffic it once was."

For Korea, this means eschewing its long-passive role in the partnership. "Now we feel we have an active role to play in defining our national interest," Lee Hong Koo, the Korean cabinet minister in charge of dealings with North Korea, said during a recent trip to the United States.

The ties between the United States and South Korea run deep. The searing experience of the Korean War still binds the two nations together. More than 40,000 U.S. troops are currently stationed in South Korea, ensuring its independence while affording America its largest outpost on the Asian mainland. In the geopolitics of Northeast Asia, Korea is America's wedge—offering America a point of leverage between China, Japan and the Soviet Union—while Korea uses the United States to counterbalance those same forces.

Sheppard Shonkoff Picture Group

Sukhan Kim, a partner at Arnold & Porter
A hard-line U.S. trade policy could backfire.

And the United States is Korea's most important trading partner, buying nearly a third of its exports and providing more than a third of its imports.

Over the years, there have been continuing tensions between Washington and Seoul: about withdrawal of U.S. troops, protectionist barriers to the Korean market and, until recently, the authoritarian nature of Korea's government. Korea has generally deferred to U.S. wishes, although it has often done so reluctantly and at the last minute.

Few trade experts or Korea watchers thought things would be any different when it became apparent early this year that the U.S. Trade Representative's Office (USTR) was likely to cite Korea's long-standing trade practices as priority offenses under the 1988 Omnibus Trade and Competitiveness Act. Such action could have led to U.S. sanctions against Korean imports.

But, in a break with the past, the government in Seoul succumbed to the hard logic of the emerging global economy—as explained to the government by many American-trained Korean economists. Korea agreed to loosen controls on foreign investment, ease strictures that impeded foreign firms from operating there and further liberalize its agricultural market. As a result, USTR did not cite Korea for unfair trade—placing it, instead, on a "watch list" to ensure its continued protection of intellectual property rights.

The Korean government "knew that to reduce tensions, their No. 1 goal had to be not to be on that list," said Sukhan Kim, a partner at the Washington law firm of Arnold & Porter who represents numerous Korean clients. This effort to settle disputes before they turn into confrontations has opened a new phase in the bilateral relationship.

"There is now a positive attitude within the bureaucracy toward the Koreans," said Tony Albrecht, president of Albrecht Inc., a Washington economic consulting firm, and former deputy assistant secretary of State for economic affairs for East Asia and the Pacific. "They negotiated positively and played the game," Albrecht said. Moreover, he said, "the successful negotiation represented a strategic accomplishment for the two governments because it broke the link between Japan and Korea, and it showed that when we both get down to some solid negotiating, we can work things out." (Japan was cited as an unfair trader, and much to Korea's dismay, the two nations have often been paired as American trading adversaries.)

Now, Korea has to deliver on its promises—and that won't be easy. Entrenched interests in Korea that would be harmed by the trade concessions may drag their feet, and other looming trade disputes are likely to rekindle tensions.

NEW TENSIONS

First among the looming disputes is steel. The Bush Administration will soon renew U.S. restraints on steel imports, but Korea wants to be exempted. Korea calls itself the world's lowest-cost steelmaker—and a free trader. American steel producers charge that Korean steelmakers have long benefited from government help in gaining preferential loans.

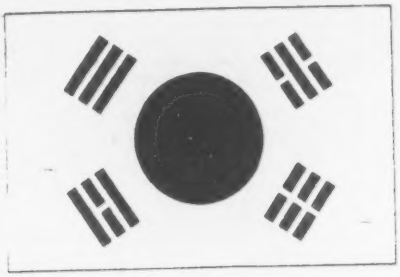
Negotiations ultimately may center on exempting particular Korean-made steel products. Seoul's success in crafting a long exemptions list will be an important test of the new bilateral relationship.

On another front, Administration efforts to open up Korea's telecommunications market broke down earlier this year, and USTR designated Korea, along with the European Community (EC), for special telecommunications negotiations, as required by the '88 Trade Act. Formal talks are expected to begin in late August or early September; Seoul is already complaining that Washington is asking for more concessions from Korea than from the EC; USTR denies it.

A special panel of the General Agreement on Tariffs and Trade has ruled against Korea's protection of its beef market, calling for Seoul to sit down with the United States and other beef exporters to increase trade. On a separate track, the Administration must rule by September on an unfair-trade-practices case brought against Korea by the American beef industry.

U.S.-Korean negotiations over Seoul's desire to co-produce its new FX jet fighter with the United States may also spell trouble. The "only reasonable course of action is [for the Koreans] to buy these planes [F-16s or F/A-18s] outright," said Sen. Alan J. Dixon, D-Ill., in a June 6 statement on the Senate floor. "If they do not, then the FX deal now under development should be scrapped."

Capitol Hill opponents of the deal worry that co-production will enable Korea to get into the lucrative jet fighter spare-parts business while Korea also



Security and Democracy

Whatever the long-term prognosis for U.S.-Korean economic relations, security and political issues will continue to play a major role in the relationship.

The potential withdrawal of U.S. forces stationed in South Korea has been a dark cloud on the horizon ever since President Carter threatened removal in 1978. President Bush's recent proposal to cut U.S. troop levels in Western Europe by 10 per cent will undoubtedly give congressional advocates of allied military burden sharing new reason to reopen the debate about America's role in Asia.

Sen. Carl Levin, D-Mich., citing a Korean government defense white paper that said the country should be able to defend itself by the end of the century, has already called for "a phased, partial reduction in U.S. troops" in Korea. In addition, to defuse issues that provoke Korean nationalists, Levin and others suggest putting a Korean general in charge of combined U.S.-Korean ground forces and moving a U.S. base out of Seoul.

For their part, Korean officials see U.S. troop removal as still 10-20 years away and tied to an easing of tensions with North Korea. They point to recent unrest in China as evidence of continued volatility in the region. Withdrawal now is "an irrelevant idea," opposition leader Kim Young Sam said during a recent trip to the United States.

American attitudes toward troop reductions are apt to be influenced by Korean political developments. Despite the restoration of a democratic parliament and the direct election of a president in recent years, "the evolution of South Korea's democracy is not yet complete," the State Department's 1988 human rights report said. Bloody clashes between radicals and police are periodic fare on U.S. nightly television news.

And questions remain about the average Korean's commitment to Western-style democratic practices. A recent poll conducted by the Korean affiliate of the Gallup Organization Inc. found that democratization was ninth on a list of the public's priority issues—trailing, among other things, economic and social stability, reunification with the North and traffic congestion.

With regional assembly elections scheduled for 1990, mayoralty elections in 1991 and parliamentary elections in 1992, Korean democracy is in for a severe test. These events should strengthen democratic institutions, but they will also provide ample opportunities for opposition demonstrations and criticism of the government. How Korea handles such confrontations, in full view of the world's news media, will help shape American sentiments toward Korea, and thus influence U.S. debates over troop withdrawal and trade policy.

learns the rudiments of building corporate jets and jet fighter trainers. Korean officials worry that they may end up paying the price for Congress's inability to block the similar FSX deal between the United States and Japan. *(For a report on the FSX, see NJ, 2/25/89, p. 459.)*

Korea's trade surplus with the United States is another potential flash point. In 1988, Korea's exports to the United States were worth $9.5 billion more than its imports from the United States. In the first four months of this year, that trade imbalance was down 17 per cent from the comparable period in 1988, according to Commerce Department figures. And Korean officials predict the surplus will continue to fall and will amount to less than $6 billion this year.

Deputy Prime Minister Cho acknowledged, however, that "there are a lot of uncertainties about the behavior of trade between Korea and the United States. And the biggest uncertainty is Korean labor disputes. If these go on, then the sharp decline in the Korean surplus will become a permanent one. If [the strikes] stop, then the balance of trade will probably show a greater surplus." In any event, he said, "the surplus will be smaller before it gets bigger."

To ensure that the surplus continues to shrink, Washington has been pressuring Seoul to let the won, Korea's currency, appreciate. And, in fact, it has: from 890 won to the dollar at the end of 1985 to about 660 won to the dollar now. Myong Hyun Sohn, minister for economic affairs at the Korean Embassy in Washington, said, "The won has appreciated enough." Indeed, the Korean government recently said it will not let the won appreciate from its current level by more than 3 per cent the rest of this year.

The Treasury Department owes Congress a report on the trade situation in October. If the surplus is still declining, pressure on the exchange rate should abate. But if progress on the trade balance has stalled, there are apt to be new calls by the Administration and Congress for further appreciation of the won.

In Seoul, meanwhile, not all parties support the government's new, accommodative approach to Washington. "There is a sense in the private sector that Korea gave up too much [in the Super 301 trade case]," said Arnold & Porter's Kim. In resolving future issues, he said, the United States must question "whether any action will hurt or enhance the hand of those working for a liberalized market. If the United States comes down hard, it's going to hurt the hand of those people who pushed to settle the 301."

Although Koreans have long cried wolf in this manner, Kim's warning may take on added significance, given Seoul's newfound willingness to compromise, coupled with its growing economic independence.

These issues are all likely to come to a head later this year. By fall, the good feelings engendered by settlement of the unfair-trade cases will have waned. It may take new efforts by both governments to avoid conflict. And even if these problems can be overcome, new and potentially more-divisive ones lie ahead.

By 1995, Korean automobile exports to the United States, including those sold under the Ford Festiva and Pontiac Le

Susan M. Mainak

Sen. Alan J. Dixon, D-Ill.
Korea should buy, not co-produce, a new jet.

Mans nameplates, are expected to reach 850,000, according to estimates by Korea's Ssangyong Economic Research Institute, an affiliate of the Ssangyong Motor Co. As a result, Korea's share of the U.S. auto market will rise from 3.4 per cent in 1987 to 7.5 per cent in 1995. Some U.S. auto analysts expect this surge to trigger calls for a cap on the number of Korean cars sold in the United States.

Korean semiconductor production has nearly doubled in the past two years, far outpacing Korea's domestic consumption. U.S. computer chip makers are worried that the excess output may end up in this country. They are mindful of Japanese dumping of excess chips on the U.S. market in the early 1980s. So far, the only U.S.-Korean semiconductor trade problems have involved some patent infringement cases in which U.S. firms prevailed.

Tight world supplies of chips currently mitigate against any immediate dumping—that is, selling products below their actual production cost. But the concentration of Korean government and business resources on chip production is being closely monitored by semiconductor industry lobbyists in Washington.

ECONOMIC SHIFT

More broadly, the future of U.S.-Korean economic relations will be determined by both countries' ability to adjust to the transformation of Korea's domestic economy from a low-wage, labor-intensive, capital-importing system to a high-wage, technology-intensive, capital-exporting one.

These changes are driven by Korea's economic accomplishments. Trade surpluses have led to capital accumulation, even though Korea has to pay interest on one of the world's largest foreign debts. New demand for the won has bid up the currency's price. And fears over the resulting inflation have given new impetus to efforts to open up domestic markets to foreign competition. Finally, international success and inflation worries have sparked domestic pressures to increase wages.

That is the same cycle of economic adjustment that Japan went through in the wake of the 1985 Plaza Accord, which dramatically altered the yen-dollar relationship. Japan weathered that storm with flying colors—automating its factories, shifting production overseas and retraining workers for new jobs. Its success was demonstrated by continued vigorous economic growth and robust trade surpluses. *(See NJ, 2/13/89, p. 382.)*

If Korea can successfully mimic Japan's economic adjustment, with possibly even greater market opening, new opportunities should arise for U.S. producers. Indeed, in the first four months of 1989, American exports to Korea rose 18 per cent, to a total of $4.1 billion. And with Korea's per capita income expected soon to surpass $5,000, its domestic market should be a lucrative one.

But a transformed Korea will also be a stronger international competitor for the United States. Korean companies will be able to go head-to-head with American firms in key high-technology fields, much as Samsung Electronics Co., Goldstar Co. and others are already doing in consumer electronics. The U.S. trade deficit with Korea could then start climbing again.

Furthermore, a strong Korean government role in this adjustment could lead to new trade squabbles over government subsidies. The Korean Ministry of International Trade and Industry has a five-year program to provide loans and technical assistance to double, by 1992, the value added in the manufacturing sector. Seoul plans a $1.5 billion investment in electronics, information technology and biotechnology research and development over the next five years and is trying to raise a similar sum to invest in an information network to help small firms make better use of computers.

The emergence of a modern, diversified economy will give Korea far more independence in international dealings. Korea's reliance on the U.S. market to buy its exports has already fallen from 40 per cent of all exports in 1986 to less than a third now, according to Korean government statistics. Over the same period, Korea's sales to Japan have grown considerably. *(See table, this page.)*

And even though the United States still has significant leverage over Korea in trade matters, that influence is likely to slip. Some Korean goods, traditionally priced in dollars for international purposes, are now priced in yen. And some economists speculate that the yen will become Korea's secondary reserve currency, after the dollar, a development that would give added clout to Tokyo.

At the same time, as Korea's capital surplus mounts, its international economic influence is apt to grow. Three years ago, Korea set up a soft-loan foreign aid fund that has been growing rapidly and now has about $300 million. "This is the beginning of Korea's providing a

Spreading Export Sales

In the past few years, South Korea's overwhelming dependence on exports to the U.S. market has declined by nearly a fourth, while its reliance on the Japanese market has grown by more than a third. This table shows the percentages of Korean exports sold to the United States and Japan from 1986 through the first two months of 1989, according to data from the Korean government.

	1986	1987	1988	1989
United States	40.0%	38.7%	35.3%	31.6%
Japan	15.6	17.8	19.3	21.4

Richard A. Bloom

William H. Gleysteen Jr., ex-U.S. ambassador to Seoul
"The United States is dealing with a different Korea."

fairly active foreign assistance program," economic minister Sohn said.

Such aid can smooth the way for foreign investments and open doors for trade: Korea has given Southeast Asian nations preferential financing to buy Korean-made phone systems, for example. "By establishing beachheads, we will become a legitimate member of the international economic community," cabinet member Lee said.

And such an economic presence will have important diplomatic ramifications. The Korean government has had preliminary membership discussions with the Organization for Economic Cooperation and Development, the Paris-based "club" of major industrial nations. "Korea would very much be willing to join [a Pacific Rim free-trade area] if there is an agreement that would accommodate differences," Deputy Prime Minister Cho said. *(See NJ, 12/3/88, p. 3052.)*

And after investing in several small economic joint ventures in Hungary, Korea opened diplomatic relations with that nation this year—establishing its first, but certainly not its last, outpost in Eastern Europe. Poland is likely to be next. Not to be outdone, the Soviet Union has opened a trade office in Seoul. "Our policy of better relations with socialist countries has moved faster than expected," Lee acknowledged. And American conservatives are beginning to worry that Korea could become a source of militarily sensitive technology for the Soviets.

A failure by Korea to adjust to changing conditions could create new problems. Korea's economy could rapidly become hollowed out, which is what seemed to happen to the U.S. economy in the early 1980s, with labor-intensive manufacturing moving offshore.

H.S. Corp., Korea's largest shoe manufacturer, is setting up production lines in Indonesia and Thailand and, by the end of this year, hopes to have 12 per cent of its production abroad, for example. Goldstar hopes to have 15 per cent of its production overseas by 1991.

Rising domestic unemployment, coupled with inflation and slow economic growth, could spell disaster for Korea's nascent democracy, might undermine Korea's defense capabilities and could choke off a promising market for U.S. exports.

TRYING TO ADJUST

Deputy Prime Minister Cho said that "there is a great limit to the ability of Korean firms to adjust" because they lack financial resources, they have no solid foundation of homegrown industrial technology and the companies' sheer size complicates innovation and quick accommodation to changing economic circumstances.

In 1988, more than 400 Korean companies closed their doors as a result of the appreciation of the won and the rising cost of labor, up a third from the previous year's closings, according to a recent South Korean survey reported in the *Far Eastern Economic Review*.

Growth in fixed investment, meanwhile, which is desperately needed to smooth adjustment, slowed from 13.6 per cent in 1987 to 10.6 per cent in 1988. And economic growth, which averaged 12 per cent each of the past three years, is expected to be 8 per cent, at best, for the next three years.

But American trade experts point out that similar, subsequently unfounded, worries were trumpeted by Japanese officials in early 1986. They note that last year, Korea's electronics industry surpassed textiles to become the nation's leading exporter. And they note that as befits an ascendant technological power, productivity in the electronics field is still rising faster than wages, enabling Korean manufacturers to become more competitive internationally.

Even though the Korean government has legitimate reason to worry about short-run economic performance, American economists say, there is every reason to believe that Korea can make the transition to an advanced industrial economy.

"Both countries are going to have to go through a period of adjustment, so inevitably there will be some tension," said Kim of Arnold & Porter.

CHANGING POLICIES

Korea's task is dictated by its changing economic and political situation. For America's part, "the United States is dealing with a different Korea, and the techniques that worked in the past won't work now," said William H. Gleysteen Jr., president of the Japan Society and former U.S. ambassador in Seoul.

A new framework for U.S. economic and security diplomacy may be needed. "I think the United States has to make some conceptual and real policy adjustments to take account of the relative shifts in the power roles in the world," said Alan D. Romberg, a fellow at the Council on Foreign Relations in New York City. "The most urgent case is Japan, but Korea is not exempt from this concern. If we don't do this, we are bound to create problems."

That might mean, for the United States, less preaching and more listening. "It is necessary for the Americans to have greater regard for the domestic problems with which a country like Korea must grapple," Cho said. "No matter what Americans think about [such problems], they are real to those countries."

Such changes will not be easy for the big brother or the little brother. Both have grown accustomed to their respective roles. But all families and all alliances mature. Gleysteen said: "I don't foresee any barriers we can't get around. They all can be managed with some kind of skill."

Despite the changes in their economic relationship, in a geopolitical sense, the United States and Korea still need each other, Gleysteen said: Seoul needs a distant patron, and Washington wants a toehold in Asia. "Unless we really screw up," he said, "we ought to be able to draw on this" to solve mutual problems. □

East Asia and the Pacific

REGIONAL BRIEF

United States Department of State
Bureau of Public Affairs

June 1989

U.S. Relations With Korea

In just under four decades, the Repu of Korea has emerged from the deva tion of a civil war into a modern democratic nation and an inspiratio developing nations throughout the world. The modern U.S.-Korean relationship dates from the end of World War II, when American troop helped to liberate southern Korea fr Japanese colonial rule. In the early 1950s, U.S. forces, acting under UN a pices, helped South Korea repel an i sion from North Korea. Our mutua curity interests, embodied in the 195 Mutual Defense Treaty, are based o our joint commitment to the stability the Korean Peninsula and Northeast Asia. As a tangible expression of thi commitment, 40,000 U.S. troops cur rently are stationed in South Korea.

U.S.-South Korean defense arran ments are the key element in this nation's strategic posture in Northeast Asia. In recent years, however, growing anti-Americanism has strained our traditional friendship. The continued presence of U.S. troops on Korean soil has become a point of contention, and changes in our economic relations are redefining the nature of our overall relationship.

U.S. policy toward the Republic of Korea rests on three interdependent components: security, democracy, and economic partnership. A stable Korean economy promotes greater security, which, in turn, enhances economic growth. Steps toward democracy promote both security and economic progress.

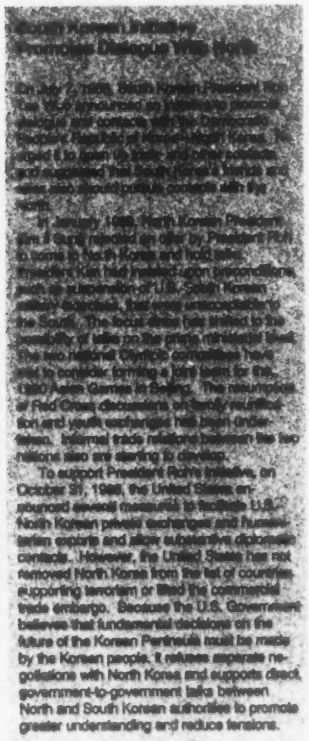
Strategic, Military, and Security Concerns

The United States has compelling political and strategic interests on the Korean Peninsula, where the interests of four major powers—the United States, Soviet Union, Japan, and China—converge. South Korea's security is critical to regional and global peace and stability.

The Republic of Korea remains wary of its well-armed neighbor, North Korea, which seeks the reunification of the Korean Peninsula on its own terms. The military balance continues to favor the North, which maintains numerical advantages in nearly every measure of combat power. Extensively reorganized since the early 1980s, North Korea's Armed Forces total more than 1 million (as compared to South Korea's 630,000) with a ground force strength of about

930,000. Efforts to modernize South Korea's Armed Forces to narrow this military lead are essential to the maintenance of an effective deterrent and the preservation of peace and stability.

In light of the continuing threat from the North, with which a state of war still technically exists, safeguarding the security of South Korea remains a paramount U.S. objective. The United States is the primary guarantor of the 1953 armistice between the two nations. At the request of the Government of South Korea, under the terms of the Mutual Defense Treaty, the United States continues to contribute to the defense of the Republic of Korea. A binational military command structure, under the joint political direction of both governments, deters North Korean aggression and would be called on to repel any future North Korean incursion. This binational defense arrangement has provided a military shield behind which South Korea has prospered economically and begun democratic modernization.



The overwhelming majority of Koreans remain committed to close U.S.-South Korean security ties, including the stationing of U.S. forces, despite increased questioning of the need for a continued U.S. troop presence by a vociferous minority in South Korea. Our two governments periodically review the strength and composition of U.S. forces in Korea and are currently discussing sharing the costs associated with their stationing there. U.S. forces will remain in South Korea as long as there is a threat from North Korea and the South Korean Government and people wish them to remain.

Democratization

The democratization of South Korean political institutions is also a major factor in U.S.-Korean relations. The Republic of Korea inherited a political tradition that followed thousands of years of imperial rule and the authoritarian values of Confucianism. In the absence of an open political process, neither democratic institutions nor the belief in compromise and mutual trust, which are the foundation for democracy, developed. As a result, politics based on the strength of individual personalities and concentration of political power in the hands of the ruling party became the hallmark of Korean politics.

Recently, a dramatic transformation has occurred as democratic values and a consensus on the need for more progress toward democratization emerge. In the past 2 years, ratification of a new constitution, elections to the National Assembly, and a presidential election marked great strides in Korea's political evolution. For the first time, the ruling government party failed to win a majority in the assembly, which now has become an important forum for the public airing of past and future policies. The election of President Roh Tae Woo was the outcome of a free-wheeling, open campaign marking a major step toward democracy.

Continuity and change will also be the guideposts of relations between the United States and Korea in the years ahead. Where change is needed or inevitable, let us be a positive force for change. Where continuity is our mandate, let us go forward resolute in our commitment to freedom and democacy. Throughout, let our close economic and strategic relationship remain as it is—a pillar of peace in East Asia.

President Bush
South Korean National Assembly
February 27, 1989

Bowing to the will of the Korean people, President Roh and leaders of the opposition have publicly affirmed their willingness to cooperate to make democracy succeed. They have pledged to work together to ensure that the momentum toward democracy will be maintained. Encouraged by these developments, the Korean people hope that this trend will continue.

The human rights situation in South Korea also has improved measurably. Several hundred political prisoners have been released, sentences commuted, and the civil rights of political dissidents restored. There is a more vital and free press in the country. President Roh has pledged to curb the power of the police and security agencies to ensure that civil rights are respected.

The United States has extended its unqualified support to South Korea's steps toward greater democracy. At the same time, we have attempted to impress upon the Korean leadership that governmental authority must rest on a foundation of respect for individual rights and fundamental human liberties. While pressing for further improvements in human rights, we have welcomed recent constitutional and legislative reforms which are helping to create a more solid democratic political framework.

Economic Success Story

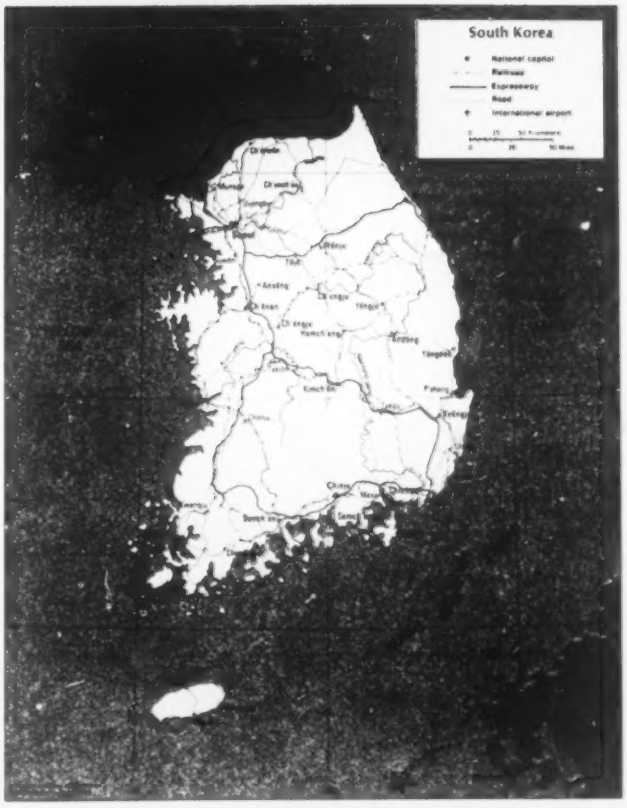
The most rapidly developing area in U.S.-Korean relations is economics and

trade. It is in this area that new problems are likely to arise.

The Republic of Korea has made remarkable economic progress in the past 30 years, becoming one of the most advanced economies in the Third World. Since 1961, Korea's spectacular economic growth has averaged over 8% annually, reaching more than 12% per year in 1986-87. Its gross national product (GNP) in 1987 was $118 billion, third highest in East Asia (after Japan and China), and per capita GNP was more than $2,800 (compared with $100 in 1963). South Korea now is in a select category of countries—the so-called newly industrialized economies. It has moved from labor-intensive, light industry into the manufacture and export of more sophisticated high-technology products, such as electronics, microchips, and automobiles.

The Korean people have worked long and hard to achieve this success. They have one of the highest rates of personal saving in the world. Highly industrious, they have demanded and received more educational and on-the-job training, producing increasing numbers of scientists, engineers, and other skilled workers. The government's economic policies, an important factor in this success story, have included currency reform, stronger financial institutions, and flexible economic planning. Although government guidance of the economy is still significant, market forces are playing an increasing role. Korean *chaebols*—very large and highly diversified conglomerates—compete fiercely.

Successive Korean administrations also have focused on export-led growth and the benefits it brings in the form of increased competitiveness and foreign exchange earnings. In 1987, South Korean exports, which are very diversified, totaled $47.3 billion or 40% of GNP. Large trade surpluses in the 1980s have enabled Korea to build up its foreign exchange reserves and to reduce its external debt to less than $25 billion.



U.S.-Korean Economic Relations

The United States has been an important catalyst in South Korea's economic progress. U.S. foreign assistance programs to Korea were important in the 1960s and 1970s. U.S. purchases of Korean goods have become significant in the 1980s. The United States is Korea's number one trade partner, taking 38% of Korean exports in 1987. Korea is now the seventh-largest trade partner of the United States and the fourth-largest market for U.S. agricultural products. The United States also is its leading source of foreign investment and technology. The bilateral economic relationship, however, is characterized by large trade imbalances: Korea's surplus with the United States was $10.4 billion in 1988.

The United States wants to achieve a more balanced and equitable trade relationship with the Republic of Korea. The U.S. Government believes that South Korea should do more to open its markets to American goods and services. Korea's trade in certain agricultural products (e.g., beef) and some service sectors, such as advertising and banking, have been especially protected. Greater access to imports would raise the living standards of Korean consumers, reduce inflationary pressures, and increase economic efficiency. Some South Koreans, believing that domestic workers, farmers, and companies would

be hurt by substantially higher American imports, resent U.S. pressure to open up Korean markets. Progress is being made, however, in reducing Korea's tariff and nontariff barriers to trade. The won, South Korea's currency, has been appreciating against the U.S. dollar since 1988, making Korean exports more expensive and less competitive. Consequently, the bilateral trade imbalance appears to be lessening in 1989.

The United States also hopes that Korea will play a growing role in the liberalization of world trade. International protectionism would stop the engine of Korea's economic development. South Korea should participate fully in the ongoing Uruguay Round of multilateral trade negotiations to reduce barriers to the international flow of goods and services. ■

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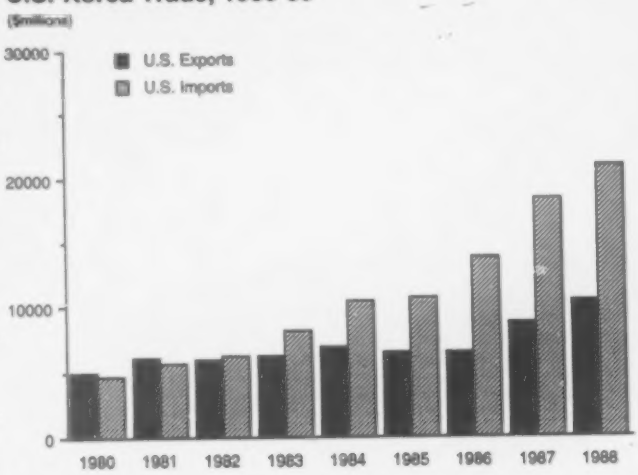
U.S.-Korea Trade, 1980-88



Sources: International Monetary Fund, "Direction of Trade Statistics"; U.S. Department of State (for 1988).

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FOR IMMEDIATE RELEASE
May 18, 1989

89-25
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HILLS: KOREA TO LIBERALIZE TRADE AND INVESTMENT

United States Trade Representative Carla A. Hills today announced that Korea has agreed to liberalize conditions for foreign investment and to eliminate significant import barriers. These agreements will be signed next week.

"Korea's market opening measures will bring real and substantial benefits to American and other exporters and investors," Hills said.

"These agreements create a useful precedent for the Uruguay Round and bilateral negotiations which will strengthen the global trading system. We remain committed to further market opening in Korea, especially in agriculture."

The investment agreement will result in removal of performance requirements on foreign investors in Korea and replacement of a screening system with a simple notification procedure for most foreign investments. Performance requirements, such as conditions that a producer export a certain portion of his production, have created significant distortions in the international trading system.

Korea also will fully open its market to foreign travel and advertising agencies and wholesalers of pharmaceuticals and

cosmetics. It also will remove requirements that pharmaceutical companies produce their products in Korea.

Korea will terminate its "border closure" practice of banning imports to protect new local production. Korea has indefinitely suspended its regulations requiring burdensome clinical testing of foreign pharmaceutical products in Korea. It will also adopt simplified import procedures for cosmetics and food labelling and it agreed to recognize and waive quality inspection requirements for internationally recognized standard or certification marks.

The two governments have not been able to agree at this time to additional liberalization measures for agricultural products. On April 8 the Korean Government announced liberalization by 1991 of 243 agricultural and fisheries products. However, the United States is requesting further liberalization. GATT findings support the U.S. and other countries' requests for further liberalization of Korea's agricultural import restrictions.

-30-

DRAFT

Highlights
May 19, 1989 Trade Agreement
Between The
United States and the Republic of Korea

US Investment

The problem. US firms attempting to invest in Korea face a variety of complex problems in seeking unencumbered access to the Korean market. Moreover, even if such access is obtained, US firms are often forced to comply with numerous preconditions for continued operation in the country. The US Chamber has identified such preconditions as including: a requirement that the US firm manufacture a certain minimum percentage of their product in Korea; export a certain minimum percentage out of Korea; and, perhaps most significantly, license or transfer US technology to the Koreans.

The agreement. While careful US monitoring and follow-up will be required, the May 19 US-ROK agreement appears to represent significant progress in removing most of the major impediments to US investment in Korea. Effective July 1, 1989, and with few exceptions, the agreement bars formal or informal imposition of the above-mentioned performance requirements to investments in the ROK. The agreement requires that, over the next four years, the entire foreign investment screening process become, in most cases, a simple notification process. Also, the agreements limits the time period for approval of US investments in Korea to sixty days in most cases. By July, 1990, majority foreign ownership will be allowed in such sectors as advertising, wholesale pharmaceuticals, cosmetics and toiletries. The Korean government has promised that, once established, US investors will be treated no differently than Korean investors. Finally, it establishes new precedents for further investment liberalizing agreements at the GATT.

US Trade and Exports

The problem. For many years, the ROK has maintained one of the most restricted trade regimes in the world. As a newly industrialized country, the ROK's trade restrictions combine with its increasing competitive strength to provide an unfair trade advantage over the US and other countries with less protectionist trade policies. While ROK exporters enjoy essentially unimpeded access to the US market, US exporters continue to face severe barriers to entry into the Korean market. The US Chamber identified such ROK trade restrictions to include: strict tariffs (20-30%) and quotas; restrictive import licensing procedures; informal but effective "guidance" from private trade associations on which imports should be allowed; restrictive customs practices; and widespread restrictions on wholesaling by foreign firms. The result is a one-sided, "un-level" competition which US firms cannot win in the long run.

The agreement. The May 19 US-ROK agreement essentially addresses three categories of Korean trade restrictions: (1) so-called "border closure" or import restriction laws, which permit denial of access for foreign goods competing with

domestically produced goods, (2) standards and testing requirements that discriminate against imports, and (3) customs procedures. The ROK government has committed to the termination of all "border closure" requirements by July 1990, a review of import laws for consistency with its GATT obligations, reduced import reporting and notification requirements, and clearer customs regulations, procedures and appeals processes. Similarly, the ROK has indicated that various standards pertaining to food products, cosmetics and toiletries, and pharmaceuticals will be liberalized in accordance with GATT principles.

Prior to the agreement, the ROK took significant unilateral action to reduce or eliminate numerous tariffs and to liberalize an import licensing system that discriminated against foreigners.

Agriculture

The problem. The ROK imposes tariffs, quotas, and other restrictions on approximately 140 agricultural products. These restrictions effectively block or impede significant amounts of US agricultural exports.

The agreement. This agreement, which will be signed later this week, will remove restrictions on 70 of the 140 products identified as priority for US exporters. The agreement will include pledges to reduce tariffs, liberalize quotas, and increase "transparency" in a number of import laws.

Implications

Once implemented, the principal effect of the agreement will be to remove a significant number of obstacles to US investment in Korea. The substantial concessions obtained by the US government are a tribute to both the US and Korean governments, who have demonstrated a recognition that cooperation and negotiation is ultimately preferable to confrontation and retaliation. In particular, the outcome is indicative of the confidence that the Korean government has in its ability to handle the responsibilities of a world-class economic power.

Achievement of this agreement also clearly demonstrates that assertive, yet prudent, exercise of the "Super 301" leverage in pursuit of America's legitimate economic interests can yield positive results. At the same time, the agreements reached further strengthen the US and ROK commitments to the multilateral trade-liberalizing principles of the GATT.

However, the ultimate success of US-ROK trade and investment relations rests not only with close monitoring of the agreement, but continued negotiations on trade and investment issues where barriers and restrictions are still a problem and not covered by the agreement.

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US Chamber-Identified Korean Trade Restrictions
And The
May 19 US-ROK Trade Agreement

Korean Trade Restrictions	May 19 US-ROK Agreement
Requirement that US firms operating in Korea produce or add value locally.	Agreement commits ROK to the elimination of these requirements.
Application of high tariffs, quotas, and taxes which discriminate against imports.	Agreement does not directly address these restrictions. However, the agreement commits ROK to a review of its import laws for GATT consistency. Prior to the agreement, the ROK had unilaterally commited to a number of tariff reductions. It is not yet possible to gauge the value of these commitments.
Requirement that importers be licensed by the Korean government.	This problem was largely eliminated prior to the agreement.
Regulation and restriction of trade by private associations, e.g., the Association of Foreign Trade Agents of Korea.	Agreement commits ROK to phasing out associations' participation in pre-import reporting and notification requirements.
Use of formal and informal customs procedures to restrict imports.	Agreement commits ROK to "transparency" in and expeditious application of customs procedures.
Forced technology licensing and transfer as a condition of entry into the Korean market.	Agreement commits ROK to the elimination of these requirements.
Prohibition of foreign ownership and participation in wholesaling.	This problem was largely addressed prior to the agreement.
Inadequate intellectual property protection.	Not addressed in the May 19 agreement; under consideration in separate negotiating "tracks".

Provided by Department of State
August 1989

U.S. - KOREA S&T COOPERATION ISSUES

Status of S&T Cooperation Agreement: An umbrella S&T agreement dating from 1974, provided the policy framework for U.S. - Korean S&T cooperation. It expired in October 1988. We are negotiating a new agreement which will, in accord with E.O. 12591 and the Omnibus Trade and Competitiveness Act, have an intellectual property right (IPR) annex and a security obligations annex. There are substantial areas of agreement, but there also remain differences on language in the IPR annex proposed by the U.S. The Korean side believes that these areas of differences will be resolved when the ROKG proposes an amendment to their patent law that will cover foodstuffs and when parallel U.S. - Korean negotiations on a patent secrecy agreement are successful.

Although expiration of the old agreement has not yet affected ongoing S&T cooperation, it could hinder planning for new activities. Permanent expiration of the umbrella agreement could have a negative effect on bilateral relations and cost the U.S. significant leverage in affecting Korean technical and ecnonomic development. The Koreans probably hope that the U.S. will consider Korean's longstanding role as a faithful U.S. ally be being willing to consider compromise language that, while providing the level of intellectual property protection sought by the U.S., will be more acceptable to their Parliament.

We anticipate that a final round of negotiations will take place in early fall and hopefully lead to renewal of the agreement.

S&T Cooperation Activities: The U.S. and Korea have active cooperation programs in solar energy, energy, conversion, toxicological data information exchange, genetic engineering, construction technology, materials science and metrology. The National Science Foundation and the Korean Science Foundation fund a wide range of exchanges and joint research efforts. The Koreans consider S&T cooperation with the U.S. as vital to their economic and technological development. The U.S. also sees increasing mutual benefits from the cooperation as Korean S&T capabilties steadily increase.

The U.S. supports civil nuclear development in Korea and has supplied eight of the eleven power reactors constructed or ordered to date. The ROK is an NPT Party and is subject to full scope safeguards and considers itself an advanced nuclear country. The U.S. has sought to influence ROK nuclear planning through cooperative programs under a Joint Standing Committee on Nuclear and Other Energy Technologies.

In addition to the scientific results, the S&T cooperation has resulted in friendly, extensive and important links with Korean scientists and technocrats. These links are important in enhancing good bilateral relations and in promoting the sales of U.S. high technology products. Once the S&T agreement is renewed, we will be able to focus on identifying opportunities for mutually beneficial cooperation.

To date, there have been no intellectual property disputes resulting from S&T cooperation. In fact, since the S&T cooperation has been in basic research areas, no IPR has yet resulted from the S&T cooperation nor is any anticipated from current ongoing activities.

The new Korean Minister of Science and Technology will be coming to Washington on August 10-11 and will be meeting with top U.S. science officials. His visit signals Korea's continuing interest in close and friendly S&T ties with the U.S.

Attachment: Table of Cooperation Activities

475C, OES/SCT - T. Jones

COUNTRY	AGENCY	SUBJECT AREA	ENTRY INTO FORCE (Y/M)	TERM-INATION DATE (Y/M)	FUNDING ($ X 1000)	REMARKS
Korea	DOE	Energy (Fossil)	81/11	91/10		Exchange of coal related information; personnel exchange & consultation in coal technology
Korea	DOE	Energy (Renewable)	81/11	91/11		Cooperation in the broad area of energy conservation
Korea	DOE	Energy (Renewable)	81/11	91/11		Cooperation in all phases of solar energy research
Korea	EPA	Environment			nb	A MOU between EPA and Korea Environment Agency was signed Nov. 2, 1987, but does not enter into force until the umbrella US-ROK S&T agreement is signed. Seven subjects for exchange were discussed at the 1987 meeting but none are under way
Korea	HHS	Biomedical Sciences	76/05	88/10		Genetic engineering under U.S.-Korea S&T agreement
Korea	HHS	Biomedical Sciences	86/04	91/04		Toxicological data information exchange & training, Korean Research Institute of Chemical Technology
Korea	NIST	Materials Science	86/09	89/09	nb	Agreement with Korea Advanced Institute of Science & Technology; studies on alloy formation by chemically induced interface migration

COUNTRY	AGENCY	SUBJECT AREA	ENTRY INTO FORCE (Y/M)	TERM-INATION DATE (Y/M)	FUNDING ($ X 1000)	REMARKS
Korea	NSF	Basic Sciences	77/05	92/05	267	NSF-KOSEF MOU under S&T umbrella agreement; joint research, seminars, & workshops; long-term joint research visits; short-term project development visits; annual seminar identifies joint priorities
Korea	US Gov	S&T Umbrella	76/05	88/10		Agreement relating to scientific & technical cooperation; negotiations currently underway on renewal of the agreement; individual cooperating agencies negotiate funding with counterpart agencies
Korea	USGS	Earth Sciences	87/01	89/12		Sedimentary basin analysis program; Korea Institute for Energy & Resources provides funding for USGS travel
Korea (ROK)	NOAA	Fisheries	77/03	89/07		Governing International Fishery Agreements established on a bilateral basis, conditions under which foreign fishing vessels are granted access to fishery resources within the U.S. Exclusive Economic Zone

COUNTRY	AGENCY	SUBJECT AREA	ENTRY INTO FORCE (Y/M)	TERM-INATION DATE (Y/M)	FUNDING ($ X 1000)	REMARKS
Korea	NIST	Metrology	86/06	89/06	nb	Agreement with the Korea Standards Research Institute to improve knowledge & engineering practices in measuring mechanical properties of materials at low temperatures; low pressure measurement techniques; methodology development for secondary ion mass spectrometric analysis
Korea	NIST	Metrology	86/10	89/10	nb	Agreement with the Korea Institute of Machinery & Metals; investigation of electrodeposited amorphous alloys for application in small scale industrial processes with emphasis on wear, corrosion, & magnetic performance
Korea	NRC	Nuclear Safety	86/05	91/04	nb	Thermal hydraulic research
Korea	NRC	Nuclear Safety	81/11	86/11		Information exchange; renewal under negotiation
Korea	NRC	Nuclear Safety	84/08	90/08	nb	Severe accident research

DOSSIER

THE NEXT BATTLE: SOUTH KOREA'S F-X FIGHTER PROGRAM

The battle scars of the Washington controversy over Japan's FS-X fighter project have not yet healed, but South Korea is approaching a decision this month which could trigger another battle in which the lines between defense cooperation and trade wars become blurred. The South Korean F-X fighter project is very different from the ambitious Japanese program, since it involves licensed production of an existing fighter rather than development of a new generation of fighter technology. But since Korea is far behind Japan in its existing aerospace industrial infrastructure, the program may be seen by some opponents as transferring the beginnings of an aircraft industry to the Koreans.

There were already a number of stumbling blocks in the negotiation of the deal: disagreements between Korea and the US over the mix of Foreign Military Sales versus commercial sales for the aircraft, issues involving the proportion of the deal to be offset by direct and indirect offset agreements, and Korean desires to have a buy-back arrangement with the US. These outstanding issues will be exacerbated by growing US resistance to technology transfers to countries which are considered trading rivals. Korea's internal political debate may also affect the program once it starts to move.

Korea, faced with the continuing threat of North Korea and its military buildup, may be somewhat less vulnerable in the US Congress on grounds of basic security needs, but the trade issue is increasingly overshadowing security considerations in Congress.

Any day now the decision process will begin when Korea's Air Force Chief recommends one of the two competing aircraft. This report provides an overview and backgrounder on the program.

Amid the climate of bitterness and betrayal that exists on Washington's Capitol Hill in the aftermath of the Japanese FS-X fighter debate, South Korea is poised to make a decision on what kind of American fighter it would like to license-produce. Republic of Korea Air Force (ROKAF) Chief of Staff General Suh Tong-yol was expected to pass his recommendation on to the Joint Chiefs of Staff in Seoul as early as June 6. The politically ambitious General Suh plans to retire this month, and he knows that it is in his best interest to settle the fighter impasse before doing so.

The exact number of aircraft that South Korea would eventually like to license-produce remains a touchy question, but the stakes are high. The first buy, estimated at about $3 billion, will be for about 120 aircraft, but some put the eventual figure at 300 with follow-on orders to the initial 120 of 80 and 100. The program has been plagued with delays, but some reports anticipate that the first aircraft could be delivered by the early 1990s and the program completed by 1995.

Over the last couple of years the South Koreans have narrowed the choice to either the General Dynamics F-16C/D *Fighting Falcon* or the McDonnell Douglas F/A-18C/D *Hornet*. Along the way, there had been talk of Northrop's F-20, Dassault Breguet's *Mirage* and the European aircraft consortium Panavia's *Tornado*, but with the US Air Force's decision not to buy the F-20 and the high price tag on the *Tornado*, the F-16 and F/A-18 have become the major contenders. As an interesting aside, however, the German press has been treating

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a Korean *Tornado* buy as a *fait accompli* since early this year. It is probable that the Koreans will buy a number of *Tornados*, but it is not anticipated that they will be purchased to meet the F-X requirement for 120 aircraft.

General Suh's recommendation on the type of fighter is only part of the decisionmaking process, but it will be a major step forward after years of negotiations. Both US government and industry sources have become increasingly frustrated over what they view as a lack of any set criteria or specified requirements by the Korean side.

The criteria for a decision now appear to have been narrowed down to four categories under which the aircraft will be judged: operational capabilities, logistic support, cost and industrial benefits. The ROKAF's recommendations are based on the aircraft's performance and operational capabilities. The ROKAF and the Ministry of National Defense (MND) are to work together on the logistics evaluation, and a South Korean industrial team, including the prime contractor Samsung Aerospace, is understood to have made an evaluation of its own.

Eventually a report will be submitted to the MND's Program Management Office, and this will be channeled up through the Cabinet level and to the President. This could take place as early as August or September.

While things appear to be moving on the Korean side, senior level defense vacancies within the Bush Administration and the lack of a clear agenda have virtually brought negotiations between the two sides to a standstill. According to one US Defense Security Assistance Agency (DSAA) official, a Memorandum of Understanding (MoU) between the two countries has lain around on the US side for the last six months and has been rendered virtually null and void.

The fighter decision has been several years in the making,and there have been many delays. In fact, in December 1987, then Minister of National Defense Chong Ho Yong told East Asia Editor Julia Ackerman that he expected a decision in the "near future". But the stiffening US position on trade offsets as a consequence of the US trade deficit, coupled with South Korea's desire to master the technology through in-country manufacture, has not given the two sides much room to maneuver.

The main sticking point concerns whether the sale will primarily be handled on a government-to-government basis as a Foreign Military Sale (FMS) as the US government would prefer, or on a commercial basis as the Koreans would prefer. Chung Ho Yong made no bones about it when he said "the Korean government wants a license-production agreement in order to foster the domestic aerospace industry, and to reinforce Korea's defense capability at an appropriate time . . ."

The DSAA has proposed the FMS sale of 12 aircraft, followed by the shipment of 36 kits for assembly by Samsung, and license-production of the remaining 72 aircraft. However, the Koreans want to buy only three FMS aircraft, assemble 27 from kits and license-produce the remaining 90. Despite this impasse the US decided to proceed in tasking the US military services and potential defense contractors with a pricing exercise based on DSAA's proposal. This was done despite the fact that the Koreans had already come up with a pricing format to identify the costs of the three categories, and despite the US manufacturers' reservations. To date, both General Dynamics and McDonnell Douglas have signed Memoranda of Agreement (MoAs) with Samsung Aerospace for possible future exchanges of commercial information.

Originally, a decision concerning the FMS versus commercial debate was to be made before the choice of aircraft, but with the impasse, the order of things has been changed. This should alleviate some of the ill-feeling stirred up by the belief that an FMS sale would favor the F-16, because of an earlier F-16 buy and subsequent support base. In 1981, the US sold 36 F-16C/Ds to South Korea to replace the ROKAF's aging F-86 *Sabers*. McDonnell Douglas would fare better under a direct commercial sale which would give it more program flexibility in the area of offsets. McDonnell Douglas can offer a range of offsets spanning the company's activities in military and commercial aerospace, whereas General Dynamics is purely a defense manufacturer.

A decision to proceed without settling the terms of the agreement before the aircraft choice is made should also reduce the influence that the DSAA has on the choice. As one US observer put it: most of the military decisionmakers on the F-X project in DSAA are Air Force officers and the more F-16s the United States Air Force can sell "the cheaper for them". Nonetheless, the FMS negotiations will be extremely

important.

The Koreans are pushing for tough offset terms. They have demanded that 70% of the initial cost be covered by a roughly equal share of direct and indirect offset agreements. Reportedly, the Koreans estimate that they can eventually provide arout 35% of the value of the initial components. It has been pointed out that since the FMS sales would comprise essentially US equipment, the bulk of the direct offset work would be found in the Korean's proposed 90 commercially acquired aircraft. On this basis, Korean parts and components could account for around 40-45% of the overall value of the commercial part of the initial order, and if Koreanization of the aircraft is phased in, then the later commercially acquired aircraft in the initial order could even be composed of a majority of Korean parts. Under South Korean law major foreign contracts are to be offset by 50%, of which 30% should involve the manufacturing stage.

If Korean press reports can be used as any kind of barometer in measuring the national preference, then General Dynamics' F-16 does seem to have the edge. While questioning the "safety and reliability" of US weaponry deployed in South Korea (in particular the F-16) an article printed in the Korean-language *Hangyore Sinmun* newspaper on April 12 said that the F-16 will most likely be chosen. The paper said that the F-16 has become the "pivot of US-Korea airpower". It noted USAF plans to station McDonnell Douglas F-15E *Strike Eagle* dual-capable fighter aircraft in South Korea and the Philippines in three to four years. Since the F-15 and F-16 provide the combat mix in the US Air Force, the paper suggested this might also work in the F-16's favor.

Another indicator of which way the winds are blowing could be last month's stop in Turkey by General Suh at the end of his Japan-US-Europe tour. The general stopped by the Turkish F-16 plant, and went on to an airbase where he observed an F-16 firing exercise. It is quite possible that he may have had an opportunity to discuss the US-Japanese FS-X co-production arrangement when he spent four days in Japan at the start of his trip.

Despite these hints that the F-16 might be favored, General Suh will presumably make his decision based on the technology of the aircraft and its suitability in meeting the ROK's requirements. McDonnell Douglas maintains that the F/A-18 has superior night attack capability, without add-ons, than the F-16, and a number of features are included in the baseline aircraft which are additional costs for the F-16. The F/A-18 is a two-engine aircraft with the greater survivability factor which that entails. General Dynamics counters that even with the "add-ons" mentioned, the F-16 remains the less expensive aircraft.

There are those in the US government who believe that if South Korea were given the go-ahead by the US side right now, it would have difficulty getting the deal approved in its own divided National Assembly. The F-X program is expected to be a heated political issue within Korea itself.

Much has happened politically in the last couple of years. When then Minister of National Defense Chung Ho Yong said a decision would be made in the "near future", South Korea was one week away from a national presidential election which ushered in a new Cabinet and defense minister. That in itself was not particularly disruptive to the ongoing negotiations, but the political climate has changed, and the politicians are finding themselves bickering more than ever in their new-found freedom.

In addition there have been a number of military personnel changes. In March, 48 of the country's top generals were reshuffled and several resigned. At presstime, a partial reshuffle affecting the Cabinet was imminent, and some officials, including the Director in the Agency for National Security Planning (formerly KCIA) were expected to be or fired in connection with the controversial visit to North Korea by opposition leader Rev. Mun Ik-hwan. Still, the biggest hurdle for the Korean fighter package will undoubtedly be the US Congress where sentiments run deep on issues involving technology transfer.

Washington Politics

South Korea's fighter plans differ from Japan's FS-X program in that the Korean fighters would be licensed-produced and not coproduced. They would involve transfer of technology which is already 10 years old while the Japanese program aims at developing a next-generation aircraft. But veteran "Hill" watchers believe that the Korean sale will be

even more difficult to steer through the US Congress than the Japanese FS-X which was narrowly approved by a Senate vote of 52-47 with restrictions added. With the model Japanese FS-X program still in hot water in Washington, however, some on the inside feel that the F-X has been dealt a fatal blow. As one industry insider explained, the Koreans are in effect asking the US to give them the technology to enter the defense fighter market (the Japanese were prepared to build their own aircraft before deciding on coproduction with the US). The Koreans, on the other hand, have wanted a licensed arrangement from the beginning. This would enable them to manage the program as prime contractors, and not as subcontractors as they feared they would become under a coproduction agreement. Also Korea's insistence on a component buy-back agreement with the US will most assuredly cause problems.

At the moment, Congress has its hands full with the Japanese FS-X legislation, and no one has given much thought to South Korea's impending request. But Korea's narrow escape from being entered on the US' "unfair trader" list, which would have put it in line for sanctions under the new "Super 301" authority of the Omnibus Trade Act, has already left Congressional opponents of the Japanese fighter deal with more resentment toward Korea. Many put Korea in the same boat with Japan, which was listed along with India and Brazil.

It is not difficult to predict potential foes of the Korean program. One need only look at who was opposed to the Japanese sale, figures such as Senator Alan Dixon (Democrat - Illinois) and the influential Senator Robert Byrd (Democrat - West Virginia) whose restrictive amendment was adopted by the Senate in approving the FS-X. One of the strongest Japan-bashers in the House of Representatives, Congressman Richard Gephardt (Democrat - Missouri), was in line at presstime to become Majority Floor Leader, the second most powerful post in the House.

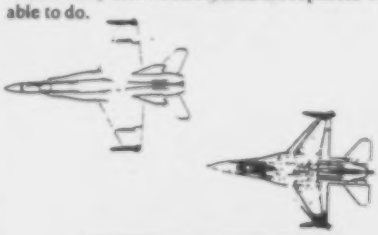
An Israeli Connection?

One government official involved in the Korean negotiations predicted that the pro-Israeli bloc in Congress would be lined up against the Korean program as they were against the Japanese FS-X. He pointed to Representative Larry Smith (Democrat - Florida), Senator Alan Cranston (Democrat - California) and Representative Mel Levine (Democrat - California). This may seem a surprising observation, but others have noticed the connection.

A May 1989 article in *The Washington Report on Middle East Affairs* questioned why Levine had been a strong supporter of the Israeli *Lavi* program, which was costing the US billions of dollars even though there were cheaper alternatives in the US, while he was opposed to the Japanese request for coproduction.

It is not clear what the Israeli connection could be if it exists. However, the Israelis could gain a piece of the Korean industrial pie in the event that the Korean F-X deal for F-16s or F/A-18s was denied. Insiders have speculated that the Israelis would be able to offer design advice in upgrading the ROKAF F-4 *Phantom* in the event that the Koreans opted for the modification route. (It is also quite possible that Korea will seek to upgrade its F-4s in addition to the F-X program.) Israel Aircraft Industries' Bedek Aviation Division is upgrading *Phantoms* for the Israeli Air Force and has also proposed even more ambitious re-engining and upgrade plans for export. However, such discussions have been extremely sensitive up to this point.

The Koreans have masterfully kept the fighter competition alive, even introducing Northrop's stillborn F-20 into the competition as a negotiating chip at one point. However, if South Korea is drawn into the Japanese FS-X debate, which has become a sounding board of frustrations within the US Congress on such disparate topics as the trade imbalance and competitive commercial aircraft spinoffs, then the Koreans will have to muster considerably more mastery than the Japanese were able to do.



In the Next *Dossier*:
Afghanistan's Rival Leaderships
Profiles of the Key Figures

APPENDIX III

Provided by Department of State
August 1989

ISSUES OF CONCERN TO THAILAND

1. During the U.S.-Thailand bilateral discussion in Washington, D.C. on April 27-28, 1989 the Thai delegation registers its concerns with the following U.S. policies, practices and measures which have adverse effects on Thailand's trade situation and prospects, and requests that the U.S. Administration undertake prompt and appropriate action effectively to address these concerns.

FOOD SECURITY ACT OF 1985: RICE TITLE

2. The Rice Title of the Food Security Act of 1985 remains a major source of concern for Thailand. Its provisions, particularly the Marketing Loan Program, the Export Enhancement Program, and the provision of long-term soft credits, continue to distort the world rice trading system.

3. It has often been said that the Farm Act is needed in order to reclaim market shares that have been unfairly taken away by subsidizing competitors. This may be the case with other commodities, but certainly not with rice. While it is true that the U.S. share in world rice markets had been declining prior to 1985, especially in Europe and the Middle East, this was not due to unfair competition from Thai exports. On the contrary, this phenomenon can be explained by the following:

(1) The rapidly increasing immigration into Europe of Indochinese refugees who had natural preference for Thai rice, both glutinous and non-glutinous;

(2) The political difficulties which the U.S. government was having with certain rice-importing countries in the Middle East; and

(3) The stagnation in U.S. productivity on rice which directly contributed to its uncompetitiveness in the world

markets - a fact which was publicly acknowledged in one of the television broadcasts by then Secretary of Agriculture, Mr. William Brock.

4. The effects of the Rice Title on Thailand's rice export can be summarized as follows:

(1) The export price differentials between U.S. rice and Thai rice (which reflect higher U.S. production costs and, to a lesser extent, higher U.S. quality) have been reduced from US$117-241 per metric ton in the period of 1982-85 to a mere US$37 in 1988. This artificial reduction, resulting mainly from the decline in the export price of U.S. rice under the Marketing Loan Program, has unfairly put Thai rice at a great disadvantage;

(2) The markets for Thai rice in Europe, especially in the Netherlands, Spain, and the Federal Republic of Germany, have been substantially eroded and replaced by U.S. rice. To illustrate, Thai rice exports to Europe declined continuously from 556,588 metric tons in 1985, the year before the Farm Act took effect, to 195,058 metric tons in 1988. During the same period, U.S. rice exports to Europe rose from 226,193 to 376,886 metric tons.

5. It is undeniable that the provisions of the Rice Title have unfairly and unjustifiably impaired the legitimate benefits of Thai rice production and export. It is ironical that the U.S. which so strongly advocates free and fair trade, particularly in agriculture, should resort to heavy subsidization when it comes to the production and export of rice, especially to the detriment of Thailand which is and has always been a fair producer and trader in this commodity.

6. We therefore urge that in the conduct of its rice production and marketing policies and practices, the U.S. Administration fully take into account Thailand's concern on this matter. Specifically, we earnestly request the U.S. Administration to :
(1) avoid subjective pricing in the determination of of the world market price. The world market price should be raised as soon as the prevailing price of rice in the world market has gone up. Delay in doing so with the objective of disposing U.S. rice surplus by price undercutting should not be allowed;
(2) set the acreage reduction for rice in the crop year 1990/91 at the maximum of 35% of the based acreage;
(3) fully honour the commitments made at the Trade Negotiations Committee meeting in Geneva on April 8, 1989 to ensure that current domestic and export support and protection levels are not exceeded between now and December 1990; and more particularly, to ensure that support prices to U.S. rice growers are not raised above the level prevailing on April 8, 1989. We also hope that in its notification to the GATT of the U.S. undertakings to reduce support and protection levels for 1990, the U.S. delegation will include rice as one of the sectors to which the undertakings apply; and
(4) resist the inclusion of provisions on rice, especially the Marketing Loan Program, in the new Farm Bill.

UNJUST TRADE MEASURES AND PRACTICES

7. Some important Thai exports have been subject to unjust trade harassment under the U.S. CVD and AD laws and trade policies and practices.

CVD and AD cases

8. The U.S. has imposed CVD on Thai rice, textile and apparel, steel pipes and steel nails to offset benefit ranging from only 0.82%-1.23% *ad valorem*.

9. For a developing country like Thailand, the alleged subsidies should have been considered de minimis and no duty should have been imposed. The benefits provided by the Thai government to these products are necessary to Thailand's economic development and did not violate GATT provisions and the Subsidies Code.

10. Developed countries in the GATT including the U.S. have recognized that subsidies are an integral part of economic development programs of developing countries. The Subsidies Code does not prohibit developing countries from adopting policies and measures to develop their industries including those in the export sector as long as they do not cause serious prejudice to the trade and production of another country.

11. It is noteworthy that incentive programs easily classified as subsidies have long been and are still in existence in the U.S.

12. Thailand views these actions by the U.S. as nothing but harassment by the U.S. and her industries.

13. Furthermore, forcing Thailand to undertake the cost and effort of defending reviews of the CVD order on rice when Commerce has not been able to find a subsidy in excess of 0.82% is also unjustified.

14. The CVD on ball-bearing from Thailand is extraordinarily high (21.54%). Our attorneys advise that the U.S. Department of Commerce artificially inflated this rate by 5-7% by denying adjustments to which we were clearly entitled. For example, two of the benefits namely income tax exemption and import duty exemption were double counted.

Steel Products, VRA, and Melted and Poured Provision

15. The U.S. authorities are threatening to use the authority provided in Section 1322 (the so-called "melted and poured" provision) of the Omnibus Trade and Competitiveness Act to restrict imports of Thai pipe and tube into the U.S. unless Thailand agrees to restraint such exports at levels substantially below those achieved in 1988.

16. This effort is not consistent with the free-trade principles of the GATT and the intent and spirit of the Uruguay Round.

17. Application of the "melted and poured" provision would represent a clear violation of Article 11 and 19 of the GATT. The VRAs are neither consistent with nor authorized by Article 19. Moreover, the U.S. International Trade Commission found no "serious injury" with respect to import of pipe and tube.

18. The threat and attempt to apply the "melted and poured" provision and to force Thailand into a VRA are tantamount to harassment of Thailand's export and therefore are extremely inappropriate and should be discontinued.

19. The claim that Thailand is circumventing the U.S.'s VRA program on steel is a distortion. Thailand built up its export performance in this particular product through fair and free competition with other VRA countries and exports of Thailand are not on top and above the quota alloted to them.

Textile

20. The U.S.-Thailand textile bilateral agreement expired on 31 December 1988. No agreement was concluded despite three

rounds of negotiation. The failure to finalize a new bilateral agreement was due to the fact that the U.S. government intended to impose group limits on Thailand's textile exports to the U.S. We view this as inconsistent with the MFA provisions.

21. The U.S. currently has fifteen outstanding MFA Article 3 actions taken against Thailand exports of textile products to the U.S. All but one of these actions were taken this year. The Thai government is concerned that these actions are in violation of the MFA. It is apparent that the actions are being taken by the U.S. based on a desire to coerce Thailand into a restrictive textile agreement unjustifiable under the terms of the MFA.

22. The fact that the U.S. actions are of questionable validity was clearly illustrated in Thailand's presentation to the Textile Surveillance Body (TSB) on January 26, 1989. After considering this matter the TSB agreed that one of the two cases was unjustified. Consideration of the second case was postponed pending gathering of additional data. The U.S. has now agreed not to continue this action rather than have the TSB review the case with the additional data which has now been obtained by Thailand.

23. The U.S. has threatened Thailand with unilateral restraint actions pending resolution of the outstanding cases. This is damaging to Thailand's textile industry. The damage to this industry is also threatened by uncertain environment in the trade community. However, many of these cases are clearly not justified under the terms of the MFA. Furthermore, the levels of unilateral restraint are also of questionable validity under the MFA.

24. We understand that additional Article 3 actions are being contemplated by the U.S. There is obvious concern that these actions may also be in violation of the MFA both in terms of justification and in terms of threatened unilateral restraint.

25. In view of the above, we strongly request the U.S. government to:

(1) exercise caution, careful consideration and judgement basing on ample information and solid evidence before accepting petitions on trade practices filed by U.S. industries to avoid creating trade harassment to Thailand;

(2) refrain from threatening and attempting to apply the melted and poured provision to Thailand's steel products exported to the U.S.;

(3) honour international agreements and commitments particularly the GATT provisions and the stanstill and roll-back commitments in the Uruguay Round;

(4) seriously review the outstanding Article 3 actions, and any actions which are contemplated with a view to assuring that they are in strict compliance with the MFA; and

(5) drop cases not in clear conformity with the MFA.

Provided by Department of State
August 1989

BILATERAL TRADE ISSUES

- Although U.S. is Thailand's largest trading partner, accounting for 19% of exports (bilateral trade was $5 billion in 1988 and growing at a 30%-plus annual rate recently), trade tensions have increased as Thailand approaches NIE status.

SPECIAL 301

- Thailand was named a "priority watch country" in May, potentially vulnerable to trade retaliation under the "Special 301" provisions of the 1988 Trade Act for certain deficiencies in the protection of intellectual property.

- Thai-U.S. bilateral trade talks are being resumed in late July, to try to head off such retaliation. Cigarettes will also be discussed.

CONTINUING INTELLECTUAL PROPERTY RIGHTS PROTECTION ISSUES

- Pharmaceutical products are now ineligible for patent protection under Thai law. The Thai have offered to improve their patent system after the end of the current GATT round, but the USG wants change sooner.

- In addition, the U.S. wants some form of protection for new drugs until the new law becomes effective. U.S. drug companies are discussing alternatives with the Thai FDA.

- Protection of computer software is problematic. Currently, Thai law appears to protect software under copyright law. Some Thai MP's favor a separate law for software.

MARKET ACCESS

- Thailand forbids the import of foreign cigarettes. American cigarette exporters have filed a 301 trade action against Thailand for this, alleging large losses.

- Thailand cut tariffs on three agricultural products last year. Imports of these items form the U.S. have increased as a result.

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DECL:N/A

THAI CONCERNS ABOUT U.S. PROTECTIONISM

- The Thai are concerned about U.S. agricultural subsidies, in particular the rice title of the 1985 Farm Act, seeing it as unfair competition against their unsubsidized rice.

- High rice prices recently have quieted Thai discontent, but the Thai are watching closely as the drafting of the next Farm Act begins.

- The Thai are uncertain about what their position is now that the Administration has made its announcement on future steel import policy. Thailand does not have a VRA. Anti-dumping and countervailing duties have both been employed against Thai steel. They are potentially vulnerable under the "melted and poured" provision of the 1988 Trade Act.

- Thailand let the U.S.-Thai textile agreement expire last year rather than agree to an overall limit on exports. Talks on resumption have so far been inconclusive.

Provided by Department of State
August 1989

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BRIEFING PAPER: THAILAND

Bilateral Relations

The United States and Thailand have enjoyed excellent bilateral relations for over one hundred and fifty years. The two countries have been mutual security treaty allies since the conclusion of the Manila Pact in 1954. Since then, each subsequent U.S. administration has reaffirmed our commitment to Thai security.

In recent years, the fast-growing trade relationship between Thailand and the US has become the principal component of the bilateral relationship. The volume of two-way trade in 1988 was $4.9 billion. It is expected to reach $6.8 billion in 1989.

While the Thai-U.S. security relationship was somewhat attenuated following the fall of South Vietnam, it was reinvigorated in the wake of the Soviet-supported Vietnamese invasion of Cambodia. With continuing instability in some parts of the region and the growth of Soviet military power in the Pacific, the importance and value of Thai cooperation with the United States has increased.

The Economy

The Thai economy recovered strongly from a painful period of adjustment in 1985/86 brought on by declining terms of trade, a growing budget deficit, and a government-imposed austerity program. Conservative economic management, the drop in oil prices, and lower world interest helped the economy return to a healthy 6.6 per cent growth in 1987 and a very strong 11.5 percent growth in 1988. Continued rapid expansion in the agricultural, manufacturing and service sectors led the Bank of Thailand to forecast GDP growth of over 9 per cent for 1989. Nonetheless, the health of the Thai economy remains dependent on external factors.

The projected economic growth will not be distributed evenly throughout Thailand. While prices of agricultural products rose significantly in 1988 and have remained strong, depressed commodity prices in the preceding few years threatened

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the impressive record of achievement Thailand has established in reducing poverty. The 70 percent of the population which depends directly on farming for a living has seen its real income fall in the last few years.

The most impressive growth will continue to be in the industrial sector. This sector was forecast to grow by 11 per cent in 1988, led by an overall surge in exports of over 40 per cent. Thailand's eight principal exports are growing at the rate of about 27 per cent for 1988. Even greater improvement is being recorded in selected manufactured exports such as computer components, integrated circuits, canned fish, footwear and furniture.

The U.S. remains Thailand's largest market, absorbing 19 percent of Thai exports. The U.S. has traditionally enjoyed a trade surplus with Thailand, but over the past five years this trend has reversed. In 1988, Thailand's trade surplus with the U.S. was about 1.5 billion dollars. Despite this, a series of trade disputes over the past few years has begun to threaten the traditional amity and cooperation of overall relations and cause political problems.

Trade

The protection of intellectual property rights and market access for U.S. exports (particularly agricultural) is the centerpiece of our trade policy towards Thailand. These issues are very sensitive in a developing country like Thailand where the majority of the population remains dependent on agriculture for its livelihood. For past several years, the US has been concerned with certain deficiences in Thai patent law and the absence of copyright protection for US works. However, US accession to the Berne Convention, effective in March 1989, has resulted in copyright protection now being extended to American works. In January 1989, because of remaining unresolved issues on patent protection, the President announced that certain cuts in Thailand's access to GSP would be made. Furthermore, Thailand is one of eight countries named in May as "priority watch" countries under Section 301 for intellectual property rights problems. A review will be conducted by November 1 to determine what further steps should be taken. Consultations with the Royal Thai Government are underway.

Recent moves to restrict market access to Thai exports have also raised complaints against growing American protectionism.

Trade disputes have occurred across a wide range of areas, including textiles, civil air, workers' rights, cigarette exports, and, more recently, steel exports.

Security Assistance

In recognition of the threat posed not only to Thailand but to other states in the region, U.S. security assistance increased sharply after 1980. However, security assistance levels have dropped since FY 1986 as a result of U.S. budget constraints (numbers below in $ millions, rounded off):

FY 86:	$ 80.5	FMS	FY 87:	$ ---	FMS
	4.8	MAP		50.0	MAP
	.2	IMET		2.3	IMET
	5.0	ESF		5.0	ESF
FY 88:	23.5(C)	FMS*	FY 89:	---	FMS
	20.0	MAP		22.0	MAP
	2.1	IMET		2.2	IMET
	5.0	ESF		5.0	ESF

(* concessional interest rate)

In FY 1990 security assistance levels are not expected to increase. As U.S. assistance has declined, the Thai have diversified their sources of security assistance by turning to other countries, principally China.

War Reserve Stockpile

The United States and Thailand signed a War Reserve Stockpile Agreement (WRSA) on January 9, 1987. The WRSA is designed to enhance peace and security in Southeast Asia and to deter potential threats to Thailand by improving the self-sufficiency and sustainability of Thai forces. The WRS consists of two complementary stockpiles, one Thai and one U.S., to be built up over five years. The United States will have access to the U.S.-titled munitions upon appropriate notification to the Royal Thai Government. Thailand will be able to draw upon the U.S. component when the two governments agree that a "nation threatening" emergency exists. In such a case, Thailand will have to reimburse the United States for the cost of the munitions, transportation, and packaging. The first U.S. annual contribution to the WRS arrived in Thailand in November, 1988.

Development Assistance

U.S. development assistance to Thailand has been progressively cut in recent years. DA in FY 1987 was $15.9 million, dropping to $15.3 million in FY 1988. The Japanese now provide over ten times as much development assistance funding to Thailand as the U.S. However, the United States has provided around one billion dollars (80% grant, 20% loan) since assistance began in 1951. During the 1950s and 1960s, most of this assistance was devoted to infrastructure development. In the 1970s, the emphasis shifted to agriculture research, rural health care, and family planning. In the 1980s, US development assistance has evolved toward science and technology, natural resource management, and strengthening of the private sector.

Refugees

Since 1979, Thailand has been the key to first asylum in Asia. For reasons grounded in security, economic and social concerns, Thailand, like other states in the region, is unable to offer permanent residence to Indochinese refugees. However, after receiving what they regard as assurances that these vulnerable populations would be resettled in third countries, Thailand has offered first asylum to over 725,000 refugees in the past decade. Most have been resettled abroad, but with a continuing outflow of refugees from the communist states of Indochina, the numbers of people in first asylum camps remains high. The United States continues to accept many more Southeast Asian refugees for resettlement than any other country (28,000 projected for FY 1989). U.S. efforts notwithstanding, the Thai continue to worry about the "long-stayer" problem: refugees who have been in first asylum camps for several years without having been accepted for resettlement in third countries.

At the International Conference on Indochinese Refugees held in Geneva in June 1989, Thailand supported the conference decision to reaffirm the basic humanitarian practice of first asylum through the adoption of a comprehensive plan of action (CPA). The CPA calls upon the international community to deal as humanely and effectively as possible with the continuing exodus of Vietnamese asylum seekers. The plan calls upon first asylum countries to grant safe haven to all asylum seekers and

to establish UN-monitored screening procedures to identify bona fide refugees, for resettlement countries to continue to resettle bona fide refugees, and for Vietnam to facilitate voluntary repatriation and expand the emigration of those of its citizens qualifying for orderly departure programs.

Thai-Vietnamese Relations

Although Thailand maintains diplomatic relations with Vietnam, contacts between the two countries are carefully limited. The most serious source of tension is the Soviet-supported Vietnamese occupation of Cambodia, which the Thai view as a direct threat to their security. As the front-line state in ASEAN's effort to resist the Vietnamese, Thailand has suffered from instability on its border and occasional clashes with PAVN troops.

The situation in Cambodia could be described as an unstable stalemate. The Coalition Government of Democratic Kampuchea (CGDK) is unable to oust the Vietnamese and the Heng Samrin regime in Phnom Penh by force. But the Heng Samrin regime has been unable to suppress the CGDK. After many months of diplomatic maneuvering, the Khmer factions agreed to meet in Paris in July 1989. This would be a prelude to an international conference in Cambodia immediately following.

THAILAND: UPDATE TO 1989 NATIONAL TRADE ESTIMATE REPORT

1. IMPORT POLICIES

Quantitative Restrictions and Import Licensing

On April 10, 1989, the U.S. Cigarette Export Association filed a petition under section 301 of the Trade Act of 1974, as amended, requesting the U.S. Trade Representative to seek removal of barriers to importation and distribution of cigarettes in Thailand. USTR initiated an investigation of the allegations contained in the petition on May 25; a first round of consultations with Thai officials is scheduled for July 31-August 1 in Thailand.

U.S. trade law normally requires conclusion of the investigation within 12 months of initiation, with a subsequent determination of whether unfair trade practices exist and whether retaliatory action is appropriate.

4. BARRIERS TO INTELLECTUAL PROPERTY PROTECTION

On May 25, 1989, Thailand and seven other countries (Brazil, China, India, Korea, Mexico, Saudi Arabia, and Taiwan) were placed on a "priority watch list" based on determinations made under the 1988 trade act's "special 301" provisions. These provisions required USTR to assess the extent of patent, copyright, and trademark protection in U.S. trading partners.

For each of the eight countries, USTR announced an "accelerated action plan" of intellectual property issues of major concern. No later than November 1, 1989, progress on these issues in each country will be assessed to determine whether initiation of a section 301 unfair trade practices investigation is appropriate.

A first round of consultations under special 301 will be held with Thai officials July 31-August 1 in Thailand.

Provided by Department of State
August 1989

U.S.-THAI S&T COOPERATION ISSUES

Status of Umbrella Agreement: The umbrella agreement expired in April of 1989. In accord with the provisions of E.O. 12591 and the Omnibus Trade and Competitiveness Act, the U.S. has proposed a six month extension to the agreement to allow time to negotiate renewal of the agreement and its amendment with an intellecutal property rights (IPR) Annex and language to protect U.S. origin COCOM controlled equipment, technology and information (security obligations annex). The Thai government is still processing the proposed extension through their treaty office.

The U.S. has not yet formally proposed the text of the IPR annex or of the security obligations annex in order not to interfere with ongoing special 301 IPR negotiations with the Thai government. However, an IPR annex is being prepared and cleared by all agencies. The principal aim of the IPR annex is to ensure that the results of the S&T cooperation will be properly protected.

Background: The U.S. - Thai S&T Agreement was signed on April 13, 1984 and is the formal document outlining the intent of the two countries to collaborate in this area. It inspired a major USAID supported effort to upgrade S&T capability in Thailand. The implementation of this 1985 program afforded the U.S. frequent and useful opportunities to discuss many issues of policy concern - including IPR. The 49 million dollar USAID Science and Technology for Development Project (STDP) is about half way through its planned seven year life. Although there have been some delays in implementation, the project is considered a key element of USAID strategy for Thailand. It has focussed on institutional development, development of an indigenous technical consulting industry, training, and improved marketability through better testing and standards of domestic products. The USAID project is not formally under the S&T agreement.

Official U.S. - Thai S&T cooperation has become a very visible and important area of bilateral realtions between the two countries. Government to goernment assistance and cooperation in S&T is regarded by the Thais as the special province of the U.S. due in large part to the extensive ties the Thai scientific community has with the U.S. The S&T commmunity in Thailand provides a growing bridge between the traditionally important civil service and universities, and the increasingly professional management group of the modern private sector. Outisde of the AID project, there are MOU's for cooperation in biomedical sciences (HHS); for direct reception and distributin of LANDSAT data (NOAA); for training and technical assistance in natioal parks (NPS); and for agricultural development.

The National Science Foundation funds eight cooperative basic science research projects with Thailand. The National Oceanic and Atmospheric Administration (NOAA) signed an MOU in September 1988 with the National Research Council of Thailand to record, process, archive and distribute Landsat data. The Smithsonian has had continuing science interests in Thailand. The U.S. Department of Agriculture has an MOU on Agricultural Deelpment and The National Park Service conducts a training program with USAID funding.

In general, the U.S - Thai S&T relationship is a strong positive element in our bilateral relations. We anticipate that as Thailand continues to develop, it will become a more important one for both sides. There has never been a IPR related problem in the relationship. To date no intellectual property has resulted from the S&T cooperation and current areas of cooperation are in basic scientific areas which are unlikely to produce intellectual property.

Attachment: Table of US-Thai S&T Cooperation Activities

475C, OES/SCT - T. Jones

COUNTRY	AGENCY	SUBJECT AREA	ENTRY INTO FORCE (Y/M)	TERM-INATION DATE (Y/M)	FUNDING ($ X 1000)	REMARKS
Thailand	BReclam	Natural Resources	88/04	90/07		Development assistance in weather modification programs to increase natural water supplies; funding by USAID of $250,000
Thailand	HHS	Biomedical Sciences	84/04	89/04		NIH activity under S&T Agreement for aplastic anemia
Thailand	NOAA	Space Technologies	85/09	Indef		MOU for direct reception & distribution of Landsat data at Landsat ground station; extends through the life of Landsat-4 & Landsat-5
Thailand	NPS	Natural Resources	84/04	89/04	10	Training & technical assistance in national parks; USAID funding of $53,000
Thailand	US Gov	S&T Umbrella	84/04	89/04		Agreement on cooperation in science & technology; individual cooperating agencies negotiate funding with counterpart agencies
Thailand	USDA	Agricultural Science	84/06	89/06	12	Agricultural development; human nutrition; soil conservation techniques; post-harvest techniques for tropical fruits and vegetables

APPENDIX IV

China Exchange News, March 1988

*Joint Study of US-China Government S&T Protocols**

Toufiq A. Siddiqi
Jin Xiaoming
Shi Minghao

The following article is based on excerpts adapted from "China-USA Governmental Cooperation in Science and Technology," a joint study completed in June 1987. Toufiq Siddiqi is research associate and special assistant to the president, East-West Center, Honoulu, Hawaii. Jin Xiaoming is deputy chief and Shi Minghao is program officer in the Division of Americas and Oceania, Department of International Cooperation, State Science and Technology Commission. The authors based their report on interviews with dozens of American and Chinese government agency protocol administrators, officials, and academics. This report represents the first bilateral effort to review the government protocols.

*Previous issues of CEN have carried discussions of the umbrella agreement between the US and the PRC on S&T cooperation and specific activities under the protocol as viewed by project participants.** *It is clear that some protocols have been more active and successful than others. Among the more fruitful activities are the exchange of students and scholars (under which fall the Fulbright Program and the National Program for Advanced Study and Research in China), programs in earthquake studies, agricultural exchanges, medicine and public health, atmospheric sciences, and management of industrial science and technology (the Dalian Center). Achievements are many and significant, but of more interest to those seeking to improve the exchange relationship are the problems that have arisen and ways to resolve them.*

Thus the selections reprinted here purposely address problem areas. Since most of these issues cut across individual protocols and are common to many US-China exchanges—beyond those falling under the government agreement—they merit highlighting. A complete list of all current protocols follows this report.

—KR

Summary of Findings

1. Since the umbrella agreement was signed in 1979, more than 500 new joint projects have been initiated, and thousands of persons exchanged in each direction. For the US and China, the programs represent the largest such arrangement with any other country.

2. The signing or implementation of some protocols had been delayed due to a number of factors, including bureaucratic red tape in both countries, differing views on patents and copyright protection, and inadequate funding. Although some of these difficulties remain, considerable progress has been made as the two sides have become more familiar with each other, and understood the different operating procedures of each country.

3. The cooperative program has enjoyed the support of the highest levels of government in both countries. China has created a special fund for technical cooperation with the US. Although budgetary constraints have precluded the allocation of additional funds to US government agencies for joint activities with China, these agencies' willingness and ability to support some of these activities from their domestic budgets point to the sound scientific grounds of these programs.

4. Both countries have benefited from the cooperative programs, albeit in different ways. China's benefits have been primarily in the form of enhanced training opportunities for its scientists and engineers, as well as access to advanced equipment and technology. Americans have in turn been able to carry out research in some unique areas previously closed to foreigners, and have received access to historical records dating back several decades and sometimes centuries, dealing with natural phenomena such as earthquakes and floods. In areas such as health and agriculture, Americans have also benefited from state-of-the-art research being carried out in China.

5. The umbrella agreement on S&T cooperation continues to be useful in facilitating the implementation of individual agreements. In a few cases, some of the agencies find their funding mechanisms too restrictive and would prefer greater flexibility in working out their own arrangements.

* The views and conclusions reached in this report are solely those of the authors, and do not necessarily reflect those of either the persons interviewed for this study, or the organizations with which the authors are associated.

** See *CEN*, June 1987, March 1985, March 1984, June 1983.

6. As the programs have matured, the view is being expressed that the meetings of the Joint Commission, which is composed of the principal science advisors and agency heads of both countries, should be held every other year rather than every year, and become less ceremonial and more comprehensive, covering larger issues of the US-PRC relationship.

7. China would like to continue with the original funding arrangement whereby the sending side pays international airfare and the hosting side pays for in-country costs. Although because of budgetary constraints a number of US organizations would like to operate under the principle of "sending side pays *all* costs," a shortage of foreign currency in China makes this an undesirable option for that country. A number of *ad hoc* arrangements outside the official protocols have been negotiated to cope with this situation.

8. As part of its policy of decentralization, China is encouraging Chinese organizations to deal directly with US institutions, and is granting them greater flexibility to negotiate individual arrangements. Because of this flexibility, the number of joint projects between the US and China now greatly exceeds those covered by the official government-government protocols.

Issues and Problems

Funding

The approach to funding visits by scientists and administrators under the protocols has been that each country pays the international airfare of its nationals and the host country picks up the cost of hotels, meals, and transportation ("receiving side pays"). In cases where this has not been possible, other arrangements such as "the benefiting sides pays" have been worked out. The US refers to this as "technical assistance" because a technical service is provided by the US but the costs are covered by China.

In most cases US Government departments and agencies have not been granted additional funds earmarked for cooperative activities with China. Thus funds have to be taken out of agency domestic budgets and need to be justified on the usual scientific or technological grounds. Since the extent to which this can be done varies greatly from one organization to another, some protocols have been easier and more successfully implemented than others.

A few cases in point illustrate this problem. Because the mission of the US Bureau of Mines is limited to the US, funds for activities with China have been difficult to obtain. The absence of a protocol, however, has not prevented persons from China's Ministry of Coal Industry from visiting the Bureau of Mines, but both sides would like to find a way to bring their cooperation under the umbrella agreement. The US Department of Transportation is another domestic agency with no funds earmarked for international programs. When the broad agreement with the Ministry of Communications was signed in 1983 it was made clear by the US Department of Transportation that implementation of programs could not be effected under the usual "receiving side pays" principle.

The current level of industry participation in the protocols, while increasing, is still very low. . . . Thus, cooperative projects need to be carefully designed so that they provide some opportunities for meaningful participation by industry.

One example of a creative way of dealing with this problem is provided by the US Department of Agriculture, which continues to send more than a dozen American teams to China annually and to receive an equal number of experts from China. The USDA requires the universities and private sector organizations to which US team members belong to contribute a substantial portion of the costs of such visits to China. The proceedings of the 1984 Symposium on Soybeans, jointly organized by the USDA and the Chinese Ministry of Agriculture, Animal Husbandry, and Fisheries were published with the support of several US companies.

An accurate measure of the US Government's total expenditure on S&T cooperation with China is difficult to obtain, but it is estimated that about ten to twenty million dollars per year are spent on such exchanges. The expenditure by China is likely to be comparable. This amount is fairly small when compared to the expenditures incurred, for example, on all PRC students and scholars in the US, a figure estimated to be 111 million dollars in 1983.*

One possibility for increasing the level of funding for the government-to-government protocol activities would be to seek additional participation from the American private sector. The current level of industry participation in the protocols, while increasing, is still very low. The private sector is clearly in a position to initiate and carry out cooperative technological ventures, and likely to be interested in doing so in areas that are commercially attractive. It is also in an excellent position to undertake transfer of

* *A Relationship Restored: Trends in US-China Educational Exchanges 1978–1984*, by David M. Lampton with Joyce A. Madancy and Kristen M. Williams (Washington, DC: National Academy Press, 1986), p. 109.

technologies, if China provides adequate incentives for doing so. It is clear that the likelihood of industry participation is strongest in areas where the private sector sees reasonable opportunities in the short or medium term to make a decent profit. Thus, cooperative projects need to be carefully designed so that they provide some opportunities for meaningful participation by industry.

The past few years have been ones of tight funding in both countries. Budget deficits in the US have led to funding cutbacks in many agencies. In China, the sharp drop in the price of oil has greatly reduced export revenues and has affected expenditures requiring foreign currency.

A lack of Chinese language expertise on the part of US teams to China has created a burden on Chinese hosts to provide suitable interpreters.

While both US and Chinese government agencies would like to expand joint programs, the current funding situation makes it difficult even to maintain some ongoing ones at earlier levels. Some projects are funded for the short term only, with unknown prospects for future continuation.

Communication

Included here are communication difficulties between individuals because of language barriers, and between the US and China because of geographical distance and different systems of operation.

In the case of Chinese coming to the US, their English language abilities have gradually improved since the early days of the exchanges because of the increasing popularity in China of learning English as a second language. The teaching of English in China is expected to further improve as tens of thousands of Chinese students in the US and other English-speaking countries return to China. However, there has been no corresponding increase in the number of Americans learning Chinese. This is likely to continue to be a major obstacle limiting the number of American scholars and students undertaking research in China.

A lack of Chinese language expertise on the part of US teams to China has created a burden on Chinese hosts to provide suitable interpreters. But English interpreters with a knowledge of the relevent technical vocabulary are in great demand in China and are often unavailable for American delegations. The authors urge the Joint Commission to encourage US groups to take at least one highly proficient interpreter with them to China. Not only would this be of considerable benefit to the visiting group and its Chinese counterpart, but it would also provide much needed encouragement to students in S&T areas to start learning Chinese and other foreign languages.

Turning to communication problems arising from geography and different approaches, a lack of information about the technical background and specific interests of Chinese delegation members has often made the planning of their visits to the US difficult. In order to prepare better and more relevant itineraries for Chinese groups coming to the US, American organizations need more information regarding the objectives of a Chinese visit and the current research interests of the scientists in the group. This problem is related to the larger one of communication between US and Chinese counterpart organizations. Instances have been cited in which replies from Chinese agencies to letters from the US were not received for several months. This delay in response is sometimes attributed to a shortage of Chinese staff able to write technical English; it may also be due to differing views within Chinese agencies of how best to proceed with the exchange activity. It would be desirable to communicate quickly and more often rather than to wait and try to resolve everything at one go. To faciliate better communication, more use can be made of the science attaches and their staffs in Beijing and Washington, DC, since both offices have staff monitoring the S&T protocols.

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Technology Transfer

After the normalization of Sino-US relations and the signing of the joint S&T umbrella agreement in 1979, US export control policy towards China was liberalized and China rapidly expanded its imports of advanced commercial equipment and technology from the US. Revised export control regulations were published in 1983 that shifted China to "Country V," a group including most friendly countries of Europe, Africa and Asia. Technical guidelines were established to describe products in seven categories that would be approved routinely for export to end-users in China. These products include computers, computerized instruments, microcircuits, electronic instruments, recording equipment, semiconductor production equipment, and oscilloscopes. A new policy was established to streamline the review process for license applications, allowing products falling within the above categories to be reviewed only by the US Department of Commerce rather than the more cumbersome interagency process. However, applications for even these products continue to be subject to review by the CoCom (the Paris-based Coordinat-

ing Committee for Multilateral Export Controls), whose goal is systematically to monitor and control the flow of sensitive technology to be shipped from NATO countries and Japan to the Eastern bloc and selected other countries.

With the new policy in place it was expected that the granting of licenses would be expedited. Unfortunately, this did not always turn out to be the case. On many occasions over the past few years, Chinese officials and American exporters have expressed concern and frustration at delays in the granting of licenses.

In China, where the state is the major producer and seller of goods, there are few provisions to safeguard the interests of private parties, domestic or foreign.

A good example of this problem and how it may be resolved is provided by the Landsat-D ground station that started operation in December 1986. The station receives satellite data covering petroleum exploration, land use patterns, crop yield estimates, the monitoring of natural calamities, and resource planning. The 1979 Understanding on Space Technology provided that China could purchase such a station from US industry. But from 1979 to 1984, export control considerations and procurement difficulties delayed the sale. After extensive negotiations between the Chinese Academy of Sciences and NASA, as well as between the various US agencies, a solution was found whereby an American company—Systems and Applied Sciences Cooperation (now STX Corporation)—was able to conclude the contract and obtain the export license for the purchase of the necessary equipment.

Both Chinese end-users and US suppliers believe that the major reason for continuing delays in the granting of export licenses is that the Departments of Commerce, State, and Defense have vastly different interpretations of the guidelines, particularly concerning the referral of cases to CoCom. There is also strong reason to believe that the US has been more restrictive in enforcing export control than its Western European and Japanese allies. As a consequence, there have been instances where China eventually turned to other countries than the US for the imports of certain technologies and equipment. Although in 1985 CoCom agreed to a list of 27 product categories that would no longer require its review, a number of companies in the US continued to voice concern over the loss of business to other countries that exercise a more liberal interpretation of the CoCom guidelines.

As a result of a much broader problem of US export control going well beyond China, a high-level group was set up under the auspices of the National Academy of Sciences, National Academy of Engineering, and the Institute of Medicine, to undertake a comprehensive study of the situation. The group's report, *Balancing the National Interest: US National Security Export Controls and Global Economic Competition*, makes a number of important recommendations concerning high-level US policy directions and the need for stronger leadership by the US in further rationalizing its domestic export controls policy and the CoCom mechanism.*

Patents and Intellectual Property

The safeguarding of patents and intellectual property has become an area of major concern in the US. In China, where the state is the major producer and seller of goods, there are few provisions to safeguard the interests of private parties, domestic or foreign. There is also a shortage of lawyers with expertise in international patent and copyright laws. Recognizing that it would otherwise be difficult to obtain advanced technologies required for its modernization program, China enacted a new patent law that went into effect in April 1987. The provisions in the law, however, exclude the grant of patents for computer software, chemicals, and pharmaceuticals, and has raised concern on the part of some American and other foreign manufacturers who have been able to obtain patents on similar products in other countries. In a few cases, it has delayed the signing or implementation of protocols such as those on aeronautical science and technology, and nuclear physics. The issue of intellectual property has also prevented or delayed the incorporation of some individual agreements into the umbrella accord.

Access

As with technology transfer, access is a complex issue that requires a great deal of mutual understanding, patience, and concerted efforts over time. On a number of occasions, American scientists have complained about limitations on field research and access to archival material in China. China has done a great deal since 1982 to open up areas of the country and institutions previously closed to foreigners. Examples are the opening up to foreign scientists and government officials of a satellite launch center and an aerodynamic research center, both operated by the military in Sichuan Province.

On the other side, Chinese scholars and students have also complained that they are on occasion denied entrance to some conferences or courses in areas such as computer sciences, where national security policy requires exclusion of nationals from all communist countries. Although government laboratories and private industry are required to take action to stem the

* *Balancing the National Interest: US National Security Export Controls and Global Economic Competition*. Panel on the Impact of National Security Controls on International Technology Transfer, Committee on Science, Engineering, and Public Policy (Washington, DC: National Academy Press, 1987.)

flow of sensitive and proprietary technology, American universities have generally sought to remain free of such controls. All the major universities in the US continue to provide equal access to American and all foreign students, including those from China. Some restrictions on foreign students may exist when externally supported research is being undertaken at special laboratories, and the funding provisions require limiting use to American students.

There was a general feeling among the people we interviewed for this study that highly successful as the past has been, it is time to move on.

It is appropriate that both the US and China take steps to safeguard information and data that are proprietary or classified. Thus there have been cases where Chinese groups visiting the US were denied access to certain government and private research laboratories. For similar reasons, the Chinese were unwilling to share their large-scale topographic maps with the US Geological Survey.

Conclusion

In the relatively short span of eight years, the PRC and the US have established levels of official and unofficial cooperation in S&T that are unparalleled in history. This is especially remarkable because of the great deal of mutual suspicion harbored before this cooperation began. The first phase of cooperation in S&T between the two countries is drawing to a successful conclusion. Decision-makers and scientists in each country have gotten to know their counterparts and have learned to appreciate the interests and concerns of the other. In a few cases, useful research findings have already been published.

There was a general feeling among the people we interviewed for this study that highly successful as the past has been, it is time to move on. Suggestions have been made for more emphasis on joint research rather than short visits and seminars, and for fewer but more high quality research efforts. China's commitment to modernization is firm, and the US continues to view China's modernization as a major positive factor in the world. Now that the scientists and policy-makers of both countries know one another, and important areas of joint research have been identified, there is good reason to believe that S&T cooperation between the US and China will continue to develop and be a source of strength and satisfaction to both countries. ■

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ACTIVE GOVERNMENTAL AGREEMENTS IN SCIENCE AND TECHNOLOGY COOPERATION BETWEEN CHINA AND THE UNITED STATES

Agreement/protocol	*Signed*	*Chinese Agency*	*US Agency*
Understanding on Exchange of Students and Scholars	10/78	Ministry of Education, Chinese Academy of Social Sciences (CASS), State Science and Technology Commission (SSTC)	US Information Agency, Dept. of Education, National Science Foundation (NSF), National Academy of Sciences, National Endowment for the Humanities
Understanding on Agricultural Exchange	11/78	Ministry of Agriculture, Animal Husbandry, and Fisheries	US Dept. of Agriculture, US Geological Survey (USGS) and Fish and Wildlife Service, both of the Dept. of Interior
Understanding on Space Technology (A protocol is currently under negotiation)	1/31/79	Chinese Academy of Space Technology (Ministry of Astronautics), and Chinese Academy of Sciences	National Aeronautics and Space Administration (NASA)
Implementing Accord on Cooperation in the Field of High Energy Physics	1/31/79	Initially SSTC, now CAS	Department of Energy
Protocol on Cooperation in the Field of Metrology and Standards	5/8/79	State Bureau of Metrology	National Bureau of Standards (Dept. of Commerce)
Protocol on Cooperation in the Field of Atmospheric Science and Technology	5/8/79	State Meteorological Administration	National Oceanic and Atmospheric Administration (NOAA) & NSF
Protocol on Cooperation in the Field of Scientific and Technical Information	5/8/79	Institute of Science and Technology Information of China (ISTIC), part of SSTC	Department of Commerce
Protocol on Cooperation in the Field of Management of Industrial Science and Technology	5/79	State Economic Commission, SSTC, Ministry of Education	Department of Commerce
Protocol on the Field of Marine and Fishery Sciences and Technology	6/8/79	National Bureau of Oceanography; Ministry of Agriculture, Animal Husbandry, and Fisheries	NOAA; NSF
Protocol on Cooperation in the Science and Technology of Medicine and Public Health	6/22/79	Ministry of Public Health	National Institutes of Health (Dept. of Health and Human Services)
Protocol for S&T Cooperation in the Earth Sciences	1/24/80	Chinese Academy of Geological Sciences	USGS; NSF
Protocol for S&T Cooperation in Earthquake Studies	1/24/80	Chinese State Seismological Bureau	USGS; NSF
Protocol for S&T Cooperation in the Field of Environmental Protection	2/5/80	National Environmental Protection Agency (under the State Council)	US Environmental Protection Agency
Protocol on Cooperation in the Basic Sciences	12/10/80	CAS and CASS	NSF
Protocol on Cooperation in the Field of Building Construction and Urban Planning Science and Technology	10/17/81	Ministry of Urban and Rural Construction and Environmental Protection	Department of Housing and Urban Development
Protocol on Cooperation in Nuclear Safety Matters	10/17/81	National Nuclear Safety Administration (earlier handled by SSTC)	Nuclear Regulatory Commission
Protocol on S&T Cooperation in the Study of Surface Water Hydrology	10/17/81	Bureau of Hydrology (Ministry of Water Conservation)	USGS (DOI)
Cooperation in the Fields of Nuclear Physics and Controlled Magnetic Fusion Research	5/11/83	SSTC	Dept. of Energy
Cooperation in Aeronautical Science and Technology	5/11/83	Chinese Aeronautical Establishment (Ministry of Aeronautics)	NASA
Protocol on Cooperation in Science and Technology of Transportation	5/11/83	Ministry of Communications	Department of Transportation
Protocol on Cooperation in Statistics	7/24/84	State Statistical Bureau	Bureau of the Census (Dept. of Commerce)
Protocol for Scientific and Technical Cooperation in Surveying and Mapping Studies	6/16/85	National Bureau of Surveying and Mapping (SSTC)	USGS/Defense Mapping Agency
Protocol on Cooperation in the Field of Fossil Energy Research and Development	4/16/85	Ministry of Coal Industry	Department of Energy
Protocol on Cooperation in Scientific and Technological Research and Laboratory Activities in the Field of Water Resources and Related Studies	4/9/86	Ministry of Water Resources and Electric Power	Corps of Engineers (Dept. of the Army)
Protocol on Cooperation in the Field of Telecommunications Science and Technology	5/16/86	Ministry of Posts and Telecommunications	Department of Commerce
Protocol on Cooperation and Exchanges in the Field of Conservation of Nature	11/19/86	Ministry of Forestry	Department of the Interior
Protocol on Cooperation in Railway Science and Technology	12/15/86	Ministry of Railways	Department of Transportation

NOTE: Since the memoranda of understanding dealing with Landsat and with basic biomedical sciences were not concluded at the ministerial level, China does not regard them as having the status of a protocol.

Provided by Department of State
August 1989

U.S.-P.R.C. S&T Agreements

I. UMBRELLA AGREEMENT:

The umbrella Agreement for Cooperation in Science and Technology expires on October 31, 1989. It has already been extended once this year. According to its terms, its termination or expiration would not affect the duration of validity of any implementing agreements thereunder. Three agencies have Protocols whose duration is directly linked to the umbrella agreement--USDA, DOT, and NIST.

II. PROTOCOLS WITH CHINA EXPIRING IN 1989 (or before)

PROTOCOL SUBJECT	AGENCY	EXPIRES	COMMENTS
High Energy Physics	DOE	1/31/89*	Expired. Some projects ongoing. DOE was intending to propose an interim extension but has not yet done so. Six months notice to terminate.
Metrology and Standards	NIST	10/31/89	NIST signed an interim extension of Protocol in May 1989. Protocol is now coterminous with umbrella agreement. Five year renewal has been initialled and is ready to sign when umbrella STA is in place. Termination does not affect ongoing activites.
Nuclear Physics and Magnetic Fusion	DOE	5/10/88*	Expired. Some Activities ongoing. Interim extension proposed by US, rejected by PRC. May be terminated on six months notice.
Aeronautical and Science and Technology	NASA	5/10/88*	Expired. Proposed new Protocol under review, but is help up while IPR annex of umbrella agreement is being negotiated. Minimal activities ongoing.
Transportation	DOT	10/31/89	Interim extension was proposed by USG in March, 1989. In July the PRC agreed to the US proposal.

PROTOCOL SUBJECT	AGENCY	EXPIRES	COMMENTS
Scientific and Technical Information	NTIS	4/30/89*	Expired. Interim extension proposed by Commerce. No PRC reply. Termination does not affect ongoing activities.
Management of Industrial S&T (Dalien Management Protocol)	DOC/OPRCHK	4/30/89*	Expired. A new protocol was initialled in Dec. 1988, and is ready for signing at the next appropriate opportunity. Activities are ongoing.
Cooperation on Statistics	DOC/BuCEN	7/23/89*	Expired. PRC has just proposed renewal or interim extension. Six months notice to terminate. Termination does not affect ongoing activites.
Agricultural Excahange	USDA	10/31/89	The Agricultural exchange does not really have a separate protocol. It operates directly under the umbrella S&T agreement, which is currently extended to 10/31/89. Termination of the umbrella agreement does not affect any implementing accords under it

Provided by NASA, August 1989

PEOPLE'S REPUBLIC OF CHINA

o NATIONAL CIVIL SPACE PROGRAM

-- Budget level is unknown.

-- Twenty-three satellites launched (ten recovered) since 1970. In April 1984 placed experimental C-band communications satellite in geosynchronous orbit. On February 1, 1986, launched second C-band communications satellite with shaped beam antenna.

-- Demonstrated Long March 3 launch vehicle using liquid hydrogen propulsion with capability of placing 2500 kg in low earth orbit and 1400 kg in geostationary transfer orbit. Improved versions with larger lift capabilities are in development.

-- Developed satellite technology, such as early stage communications, weather, and remote-sensing satellite flown to date, with more sophisticated models being developed.

-- Developing technology and a management plan for the formation of a Chinese manned space project in the 1990s.

-- In 1986, offered its CZ-3/CZ-2 (Long March) launch vehicles on the world launch services market. Expanded launch facilities at Xichang are capable of handling at least six or seven missions a year, only one or two missions will launch Chinese satellites.

-- Announced that it has provisional launch contracts for five U.S. spacecraft, four Brazilian satellites and several Swedish Mailstar spacecraft.

-- In August, 1987, launched and recovered two French microgravity experiments owned by the Matra Company. Marketing one recoverable satellite flight per year to foreign users.

-- In September, 1988, launched its first experimental solar synchronous meteorological satellite on the Long March 4, which is the latest in the series of Long March launch vehicles.

-- Launched its third communications satellite on December 22, 1988.

o COOPERATION WITH NASA

A. SPACE

-- Under the January 31, 1979 Understanding on Cooperation in Space Technology, the Chinese contracted with Systems and Applied Sciences Corp. (SASC) to build a Landsat-D ground station. The station began formal operations in December 1986.

-- In 1979 the Chinese also expressed interest in procuring a communications and broadcasting satellite system from U.S. industry. It appears that the Chinese have decided not to pursue this proposal.

-- Protocol on Space Cooperation and related Annexes

Space Protocol and Annex I, Intellectual Property Rights - Response to latest Chinese drafts is pending conclusion of an overall Intellectual Property Rights Annex between OSTP and SSTC.

Annex II, Cooperative Solar-Terrestrial Research Program - Received Chinese comments on U.S. June 1987 draft Annex in December, 1987. Further negotiation pending conclusion of an overall Intellectual Property Rights Annex between OSTP and SSTC.

Annex III, Cooperative Program in Space Physiology and Medicine - U.S. draft sent to China in June, 1987. NASA Life Sciences team visited Institute of Space Medico-Engineering in July 1988. As a result of the visit, revised text of Annex is being drafted.

Annex IV, Cooperative Research in Space Geodynamics and Frequency Standards and Time Transfer - Received Chinese comments on U.S. June 1987 draft Annex in December, 1987. Further negotiation pending conclusion of an overall Intellectual Property Rights Annex between OSTP and SSTC.

Annex V, Space Technology Cooperation - Received Chinese draft in April, 1987. Content differed significantly from text agreed to in 1984. In process of coordinating response with appropriate NASA staff.

-- Letter agreements have been concluded for Chinese Scientists to participate in the following NASA Space Science and Applications Guest Investigator Programs:

- Crustal Dynamics Project
- Solar Maximum Mission (SMM)
- Dynamics Explorer (DE)
- International Ultraviolet Explorer (IUE)
- International Sun-Earth Explorer/International Cometary Explorer (ISEE/ICE)

B. AERONAUTICS

-- Protocol on Cooperation in Aeronautical Science and Technology between NASA and the Chinese Aeronautical Establishment (CAE) was signed on May 11, 1983. Annexes I and II to Protocol were signed on April 5, 1985 and Annex III was signed on July 9 and August 15, 1986, respectively.

-- The first phase of cooperation, two technical symposia, was completed in September 1985. In October 1985, the first NASA-CAE Joint Working Group (JWG) met to assess the progress of the cooperation and develop plans for the next phase. During the JWG meeting, a second phase of cooperation was discussed and formalized as Annex III. Under Annex III, a symposium on propulsion research instrumentation was held in China in October 1986; and a symposium on fundamental experimental aerodynamics was held at NASA Langley Research Center, Hampton, Virginia, in June 1987. Annex III also called for a cooperative effort in fatigue and fracture mechanics. NASA and CAE have agreed on a joint technology test plan, including the schedule, as outlined in paragraph 3.D. of Annex III. Since both sides encountered difficulties in completing testing of the materials, the program has been extended to no later than the end of 1989.

-- The second NASA-CAE JWG meeting was held in November 1987 in Beijing. NASA and CAE informally agreed to add an Annex IV to the Protocol which would outline terms and conditions for a joint study of wind tunnel wall

interference. In an attempt to reconcile the Minutes of the JWG and text of Annex IV for the joint study via correspondence, signature on both documents were delayed. The documents were signed by the Chinese and NASA in early 1989 and backdated to May 10, 1988.

-- The Protocol expired in May 1987. On April 27, NASA requested Science Counselor, American Embassy, Beijing, to forward a draft Protocol to SSTC which proposed a revision of the Protocol to serve primarily as the channel for a regular exchange of information between NASA and Chinese senior management in charge of aeronautical research and development. Such a Protocol would allow for new cooperative projects if and as opportunities arise, but would not assume cooperation would necessarily take place.

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MOUNTING VIOLENCE: Protesters clamored atop an incapacitated vehicle.

U.S.-China Research Gets Caught In Cross Fire Of Student Uprising

The recent turmoil casts pall on cooperative projects that took years to develop and also jeopardizes status of Chinese students abroad

BY BARBARA SPECTOR

As the echoes of the tanks on Beijing's Tiananmen Square begin to fade, scientists from the United States whose research requires access to Chinese sites—and their Chinese counterparts working or studying in the U.S.—are wondering whether they should permanently write off their projects as casualties of the violence.

Universities, private companies, national agencies, and individual scientists have spent years overcoming xenophobia, language barriers, and other obstacles to collaboration. But one thing is clear: For now at least, they must put their plans for joint research on hold while the governments of the U.S. and the People's Republic of China (PRC) plan their next steps in the wake of the squelched Chinese student uprising and subsequent executions.

While the crackdown on Chinese citizens threatens the future of many corporate research collaborations, scientists at most U.S. firms involved are proceeding as best they can. At New York-based Grumman Corp., for instance, although U.S. engineers and technicians are forging ahead with the initial phase of a $500 million project to develop new electronics for the Chinese F-8 aircraft under the direction of the U.S. Air Force, Chinese nationals have been let go. "We're not allowed to let them into Grumman property," says Robert Harwood, a spokesman for the company. As for the future of the project, "we have not heard from the Air Force yet as to how we're supposed to proceed," says Harwood.

And it was just this past March that New Brunswick Scientific Co. (NBS), headquartered in Edison,

(Continued on Page 8)

Cooperative Science On Hold After China's Turmoil

(Continued from Page 1)

N.J., announced plans for a joint venture with the East China University of Chemical Technology, involving "collaborative efforts in the research area, primarily in cell culture," according to Robert Kovarcik, NBS vice president and general manager. Because the joint research project is still in its initial stages, Kovarcik says, there were no NBS employees in China when the student demonstrations began. "We're still working out who's going to be doing what, and deciding which people will be working on which project." So far, he says, there are no plans to scrap the venture: "We're still continuing to do our portion of it here."

On the academic front, Chinese-American professors who have worked for years to bring Chinese students to the U.S. are now putting these exchanges on hold. The Society of Chinese Bioscientists in America, a 3-year-old, 1,137-member organization, had planned to begin an exchange program this year, but given the current political situation, "the program will probably be in some kind of danger," says Leland Chung, a urologist at the University of Texas M.D. Anderson Cancer Center and outgoing president of the society. The organization, which has received 14 applications from Chinese students wishing to study in the U.S., had hoped to accept the applicants by Sept. 1, but "their fate is not clear at this time," says Chung.

Also in limbo are Chung's plans for a trip to China later this summer. The Texas physician had been corresponding with Chinese colleagues about a proposed itinerary, but "I don't want to get them in trouble," he says. "I want to wait for their reply before I write again."

At Cornell University, Ray Wu, a professor of biochemistry and molecular cell biology who has actively recruited Chinese students, speculates that because most of the demonstrators in the PRC were undergraduates rather than graduate students, research in China will be affected only on a short-term basis. Grad students in the PRC, Wu says, "were not in their lab for the last month or so, but now that things have settled down, they are ready to go back."

DEEP CONCERN: K.Y. Chen, professor of chemistry at Rutgers, says Chinese students in his lab cannot concentrate on work.

Chinese nationals studying in the U.S. who had planned to return to their native country "certainly will not go back immediately," the Cornell professor says. "They may wait and see if things will settle down in a month or two." (The federal government has granted one-year visa extensions for the approximately 73,000 Chinese students and 300,000 visitors and businesspeople in the U.S.)

But though these students may be able to extend their stay in the U.S., their research won't necessarily be their main priority, notes K.Y. Chen, professor of chemistry at Rutgers, the State University of New Jersey. Since the student demonstrations began in Beijing, Chen says that the approximately 30 graduate students and visiting scholars from mainland China in his department "cannot do their work. They are very much concerned about what's going on in China."

Rutgers' chemistry department has accepted 10 graduate students from China for the coming academic year, says Chen, but "at this stage, we do not know whether they all can come." However, the professor theorizes that the regime in China will eventually permit the students to study in the U.S. as planned: "They want to keep things normal."

Ralph Moir, a research physicist at the California-based Lawrence Livermore National Laboratory, also predicts that "exchanges will be back on track" after the tension in China cools off. "The push to modernize is stronger than ideological control," says Moir, who went to China in mid-May for a fusion nuclear technology exchange program under the auspices of the U.S. Department of Energy.

Other U.S. federal agencies are also waiting to see how Chinese government action will affect cooperative ventures. The National Science Foundation's U.S.-China Cooperative Research Program is "in a state of suspended animation," says Alice Hogan, senior program manager. "We're waiting for things to sort themselves out."

Although the NSF has not formally suspended its program, "we've officially discouraging travel of staff and grantees" to the troubled region, Hogan says. In addition, she says, the agency is "looking into providing additional limited support to Chinese grad students and postdocs."

Hogan estimates that at least 100 NSF-sponsored research projects have an active China component, encompassing almost every division in the foundation. As for the future of the grantees' projects, "we'd be amenable to people extending [their grants] within the framework that NSF allows," enabling researchers to return to China once the situation stabilizes."

UCI's Tien: The U.S. should "review its cooperative research agreement and policy" as the situation develops

The National Academy of

Sciences' June 5 suspension of its exchange with the Chinese Academy of Sciences and other PRC scientific institutions will strike a terrible blow for those NAS grantees who "require access to China to do the work they applied to us to do," says Robert Geyer, acting director of NAS's Committee on Scholarly Communication with the PRC. The issue of whether those working under NAS auspices should consider their research stint ended or should plan to return later is "something we have not had the time or the opportunity to discuss with the candidates affected," Geyer says.

The NAS official estimates that between two thirds and three quarters of its 35 grantees have left China. As for the remainder, many of whom were doing fieldwork in remote areas of the country, "most we have not heard from," Geyer says. "We have tried to [contact them via] cable or telex; we're not surprised we haven't reached them."

Incredible Risk

Gordon Kimber, professor of agronomy at the University of Missouri, was in China lecturing and doing research on wheat and arrived in Beijing on June 1, two days before the massacre occurred. His Chinese colleagues were able to secure tickets for him to leave the country on June 6, but they did so "at incredible personal risk," the agronomist says. "They had to lie on the floor while the shooting was taking place."

Kimber is hopeful that he will be able to continue his collaboration with the Chinese. "We have several long-term projects," he says. "We'll each do our part, and we'll get together as soon as we can."

Also in the area at the time of the massacre were Cornell professors Henry Tye, a physicist, and his wife, Bik Tye, a molecular biologist. The couple were in Beijing to attend an international symposium on "String Fields and Quantum Gravity" led by Nobel laureate T.D. Lee, a physicist from Columbia University. Although the symposium was suspended in a formal sense, says Henry Tye, a member of the organizing committee for the event, "people still decided to have lectures, because 150 people or so sitting around doing nothing [didn't] make sense."

Scientific Community Divided

As for the future of scientific collaborations, the scientific community, like the politicians, cannot agree whether it would be better to work within the new Chinese system, or to stand on principle. Tien Chang Lin, executive vice chancellor at the University of California at Irvine and UCI Distinguished Professor of Mechanical Engineering, has long been a proponent of U.S.-Chinese collaboration and in the past has discussed education policy with Chinese senior leader Deng Xiaoping and other PRC officials. Nonetheless, he now feels that the U.S. should "review its cooperative research agreement and policy," and should reconsider continuation of such collaborations, pending developments inside China.

But Chung disagrees. "I really admire what President Bush decided to do, to keep communication open," says the Texas urologist. Chung says he believes the U.S. should work to "[keep] the communication network open, to maintain scientific contact, to change [the Chinese government's] view by promoting American values into their society. Hopefully, this will lead to change in the long run."

Henry Tye, the Cornell physicist, shares Chung's view: "If [intellectual] contact is broken, it would be much worse" for Chinese scientists. "The only thing that could help [Chinese scientists] from the outside is to maintain contact. If you punish the government, you end up punishing the people." □

THIS WEEK

New Scientist, June 17, 1989

China's open door closes for science

Katharine Forestier, Guangzhe

AS TROOPS continued to arrest and shoot the citizens of Beijing this week, the prospects for China's scientists could not have looked bleaker. The universities lie empty; students and academics have fled into hiding in fear of their lives. As the world waited to hear the fate of Fang Lizhi, the dissident astrophysicist hiding in the US Embassy, thousands of other scientists had disappeared. Many of them will qualify for the tag of counter-revolutionary—a crime apparently punishable by death without trial.

In the short term, at least, the policy of the "open door" is shutting on science, both from outside and within. Western countries will be unwilling to transfer sensitive technology to China. The US has already announced a ban on the sale of arms.

Before the current crisis, economic reforms had given an unprecedented free rein to talented Chinese scientists to go independent. About 10 000 private or cooperative companies were set up; these threw out the old bureaucratic methodology and pursued an aggressive, and often successful, commercial approach to science. The computer industry in particular made headway; its fastest-growing company is the Beijing Stone Group, set up by Wan Runnan, another of the scientists now believed to be under investigation.

If the orthodox Marxists, headed by premier Li Peng, remain in power, this initiative is likely to come to an end. Conservatives have been complaining that such companies have been undermining their state-owned competitors.

Economic reform was bringing its own problems and contradictions. As the government cut subsidies to most institutions, they had to look for new ways of supporting themselves. Most institutions have looked to short-term commercial solutions rather than long-term research. The basic problem has been that the commercialisation of science was being grafted on to the Stalinist structure of the centralised science institutions.

The reform of science, engineered by the now disgraced reform school of thought, aimed to improve the efficiency of scientists, who were previously notorious for their lack of interest in turning research results into products. Fixed subsidies to research institutes had been cut by between 10 per cent and 20 per cent a year since 1986. Institutes could make up the shortfall by applying for grants for specific projects. They also raised funds by developing their own commercially-viable products which they have been allowed to patent since 1987.

Happier times: Fang Lizhi addressing students last month

Many important scientific developments that are commercially viable have been appearing as a result of the commercialisation policy. But institutes may have to go to extraordinary lengths to find new sources of funds. The Ocean University of Qingdao, for example, is selling long-life ice cream made from milk and seaweed.

Many science-related industries also tap funds from subsidiaries that have nothing to do with science. The aero-technology industry balances its books by making sports bags, watches and radios. The Beijing Stone Group has a tourist hotel and a trading subsidiary. Even the Chinese army owns the largest Chinese hotel group.

Over the next three years the State Science Commission wanted about 100 000 scientists to move to companies set up under research institutes or to collective or private companies. But a survey of 6493 large and medium-sized enterprises revealed that the merging of research and production had not been particularly successful. Only 1913 of the enterprises had R&D sections. About 28 per cent said they had no money to develop technology. If research ever resumes a normal rhythm, institutes or their own companies will be encouraged to work with industrial units project by project.

The Chinese Academy of Sciences (CAS), China's main organisation responsible for research in basic and applied sciences, has, since 1986, spawned about 200 companies to develop products and carry out contract research. The proportion of projects that resulted in marketable products had increased from between 20 per cent to between 50 and 70 per cent.

The Keli Corporation, founded under CAS in 1985, carried out R&D projects in signal processing technologies and was one of the most successful of the CAS companies. It joined other research and production units to form the Keli Group, with a staff of 5000.

The policy of commercialisation had had some successes: they include the development of word processing and typesetting systems using Chinese characters, and magnetic materials made from rare earths. Adaptations of traditional Chinese medicine were particularly plentiful. Researchers have used laser technology and electronics, for example, to stimulate acupuncture points.

Until the exodus from the nation's campuses, universities were the scene of healthy trade. Beijing Agricultural University, for example, marketed a vegetable health drink and an infrared thermometer. The Blast Technique Development Company under the Chinese University of Mining and Technology, offered a static demolition agent for technology transfer. Nanjing University wanted to sell crude-looking rubber "intellectual head-shaped finger toys".

Until the imposition of martial law in Beijing, areas like Zhongguancun—a suburb of Beijing where high technology companies congregated near to research institutes—were the hope for the future. But for scientists, it is much more than the future of science that is at stake, but their personal fate. China has entered a dark age grimmer than the Cultural Revolution, when the army never turned its guns on the people. □

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RICHARD P. SUTTMEIER

Listening to China

China's push for high-technology development can benefit U.S. science and commerce, but only if we update our strategies for cooperation.

In the mid-1970s, when the Japanese told the world how they intended to create a high-technology future, few Americans listened. It took a major shock to the U.S. economy before we looked closely at the changes in Japanese science and technology (S&T) and began devising strategies for dealing with them. One suspects that had Americans been more attentive at the time, our current relations with Japan would be very different.

Today, the United States is in danger of repeating these mistakes in its S&T relations with the People's Republic of China. The PRC is probably too poor to be the "next Japan." Nevertheless, it has started making strides toward becoming a world-class science and technology power. The changes going on in China present the United States with opportunities for expanded trade and, in the long run, for more rewarding scientific exchanges. But through inattentiveness, the United States could easily forfeit these opportunities to foreign competitors that are more attuned to the PRC's aspirations.

Over the past decade, the United States has built up a science and technology relationship with China that has served both sides well. Under the U.S.-China Agreement on Cooperation in Science and Technology, signed in 1979, some 29 protocols have been drawn up between Chinese government ministries and such U.S. agencies as the Department of Agriculture, the National Bureau of Standards, and the Corps of Engineers. These have resulted in more than 500 projects—exchange programs, training programs, joint research, and information sharing—in a broad range of scientific and technical fields. Augmenting the government-to-government relationship are numerous agreements between U.S. and Chinese universities, as well as commercial agreements that produce some $10 billion a year in trade, much of it technology-related.

For the Chinese, S&T cooperation with the United States has meant rapid advancement. When these relations began to unfold, China was just coming out of the trauma of the Cultural Revolution; its edu-

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cation and R&D systems had been stagnant for a decade, its base of computers, instruments, and other research tools was out of date, and its S&T leadership consisted of aging Western-trained scientists and largely uneducated cadres. Since then, tens of thousands of Chinese students and scholars have come to U.S. universities, and liberalized export controls have significantly increased transfers of U.S. technology to China. Such access to American technology and research facilities has been instrumental in China's efforts to bring its science up to world standards.

For the United States, the benefits have been less dramatic but no less significant. In addition to enhancing our scientific knowledge in certain areas—such as medicine, agriculture, and seismology—our S&T relations with China have served key geopolitical and economic aims. The Carter administration saw closer ties with China as a way of presenting a united front against Soviet expansionism in the region; science and technology were regarded as crucial strands in our "web of relations" with China. Moreover, before normalization, Japanese and European firms enjoyed opportunities for trade with China that American firms did not; S&T cooperation has done much to help U.S. business catch up. Finally, because of its large area and population, China is a major factor in the world's food, energy, and environmental quality equation. A China able to feed itself and provide for its own energy needs, and perhaps those of others, would have a very different impact on these global balances than would a less capable China. It has thus been in the U.S. interest to aid the PRC in modernizing its agriculture and energy industries and in raising its environmental consciousness.

Despite its past successes with China, however, the United States cannot afford to rest on its laurels. It is still an admired scientific center and source of technology, but the dominance that American S&T enjoyed in China a few years ago is beginning to wane. As they make a new push toward commercial competitiveness in science and technology, the Chinese are welcoming all comers. They have discovered technologies from Europe and Japan—such as chip fabrication equipment, process control computers, and steelmaking equipment—that equal or surpass those from the United States and that are more readily available. They have also found that these same countries offer opportunities for scientific exchange on terms that are quite favorable to China, often more favorable than those offered by the United States.

Thus, as China changes, so must our S&T policies. For example, the U.S. government needs to do a better job of gathering and analyzing data on China's new S&T programs and organizations, and making this information available to business. It needs to be more visionary in its funding of joint S&T activities. It may also need to set up special institutions—heretofore lacking—for advancing U.S. scientific and commercial interests in China. Only through these and other imaginative approaches can the United States hope to retain its competitive edge in a China being courted by others.

A record of steady progress

The China we are dealing with today is not the China we were dealing with when our S&T relations began. In the past decade, close to 50,000 Chinese students and scholars have gone abroad for study. Science and technology policies have been gradually overhauled, and major reform measures have altered both the economic and the R&D systems. Perhaps more important, there has been a transformation in China's leadership in science and technology. The new heads of national science policy bodies, academic institutions, technical agencies, crucial S&T-related offices within the bureaucracy, and research institutes are younger, better educated, and often quite cosmopolitan. In addition, the 13th Party Congress, held last October, gave rise to a new national political leadership composed largely of technically educated individuals who have for many years worked on China's industrial development.

The new generation of leaders is now pushing a series of programs designed to boost China's standing as an originator of scientific research and a producer of high-tech goods. Common to all these efforts is an attempt to introduce more effective approaches to the funding of R&D and to stimulate greater mobility of technical personnel. Accordingly, China is moving away from the traditional Soviet R&D model that has had such a powerful (and often negative) effect on Chinese science since the 1950s—a model in which research is separated institutionally and geographically from production, and research centers are funded on an annual allocation basis.

Instead, China is drawing inspiration from the

R&D system of the United States. Through the founding of institutions such as the new National Science Foundation of China, it is shifting toward competitive, project-oriented funding. It is also establishing science parks and engineering research centers. In addition, it plans to open more than 50 new national laboratories during the next few years. The majority of these national labs will be sited at universities, as part of a larger effort to strengthen the research role of institutions of higher learning.

Of the many changes going on, two stand out as having particularly far-reaching implications for China's S&T competitiveness and its future relations with other countries: a national high-technology program and experimentation with new strategies for commercializing the results of R&D. The high-tech program is in the tradition of state-directed efforts to push S&T development but has a number of innovative features. The commercialization strategies—being pursued both inside and outside the government—represent a new attempt to stimulate innovation through the influence of market forces.

The policy environment of the 1980s—with its stress on "opening doors" and commercialization, and its deemphasis of defense—is making available some of China's best technical thinking to those who would exploit it.

Joining the revolution

The open-door policy has unrelentingly brought home to the Chinese the significance of the international high-tech revolution and the importance of being a part of it. When scientists deliberated in 1986 on the question of a special high-tech initiative—with the endorsement of then-premier (now Party General Secretary) Zhao Ziyang—they concluded that China could not afford *not* to have such a policy. The resulting national high-technology program was announced in 1987. At its head is State Science and Technology Commission Vice-Minister Zhu Lilan, who also directs China's new program in superconductivity.

It was agreed that China should not attempt to cover every field. Instead, the government has picked seven major technology areas that build on domestic strengths, or that are judged to be particularly important for the future:

- Biotechnology (high-yield and high-quality breeding of plants and animals, new medicines and vaccines, gene therapy, protein engineering)
- Space technology
- Information technology (intelligent computer systems, optoelectronic devices and microelectronic/optoelectronic systems integration, information acquisition and processing)
- Laser technology
- Automation (computer-integrated manufacturing systems, intelligent robots)
- Energy technology (coal-fired magnetohydrodynamics, advanced nuclear reactor technology)
- Advanced materials

The work performed in these fields—at institutions all over China—will probably involve a combination of original, innovative research and "tracking" of developments in other countries. Although the levels of funding for the entire program have not been announced, initial support for the information-technology projects is slightly more than $U.S. 16 million. Leaders of research institutes anticipate generous increases over their normal budgets from the program.

The program breaks new ground in its approach to organization and management. The multiple levels of decisionmaking required for approving projects in the past have been eliminated; researchers themselves, rather than bureaucrats, are to play the central role in grant approvals. Each of the seven main project areas has an expert committee for reviewing proposals and, under these, subcommittees in charge of specific projects. The committee members are drawn from the State Science and Technology Commission and in a few cases from the National Defense Science, Technology and Industry Commission.

The Chinese are operating on the assumption that the program will allow for international coopera-

tion. Reportedly, there are special funds set aside for this purpose. Chinese officials recognize that commercial and national-security concerns could limit cooperation in certain technology areas, but they are especially eager to join with other nations in exporting high-tech policy and management issues.

Academy of Sciences, Inc.

Just as the national high-technology program is an attempt to direct S&T development from the top down, China's efforts to increase the commercialization of technology are designed to boost S&T from the bottom up. The Chinese have recognized the benefits that the marketplace can bring to technological development. They now see that competition and customer feedback can provide powerful inducements to technical progress, and that commercial sales provide profits that can be plowed back into research and development.

The Chinese government is putting this new awareness into practice in two basic ways. First, it is encouraging the Institutes of the Chinese Academy of Sciences to form high-technology companies that commercialize CAS research. Second, it has started to allow independent entrepreneurs to set up their own privately run firms, many of which happen to be in the area of science and technology.

The new CAS-sponsored companies encompass a wide range of technologies and products. In some cases, the underlying scientific and technical knowledge is the result of past high-priority military research. Much of the defense-related work done by CAS institutes in the past was highly classified, and thus could not have been commercialized even if there had been the incentive to do so. In contrast, the policy environment of the 1980s—with its stress on "opening doors" and commercialization, and its deemphasis of defense—is making available some of China's best technical thinking to those who would exploit it. The recently founded Da Heng Company, for instance, is organized around the Academy's six institutes of optics and fine mechanics (total staff: 10,000), which developed the Chinese military's laser-based satellite tracking system. Da Heng expects to produce a variety of optical products, including commercial lasers and optical fiber products.

One of the first CAS firms established was the Keli Company, founded three years ago by Institute of Acoustics researchers and now part of a larger organization called the Keli Group. The group has 20 research and production facilities. These employ 5,000 workers—1,000 of them university graduates (a very high proportion for a Chinese enterprise) and 3,000 of them in R&D.

Keli has a contract to develop advanced remote-sensing array processors for oil prospecting, as part of a large national project for the Petroleum Ministry. In what would once have been an unlikely turn of events, Keli won the contract competitively over the ministry's own Institute of Acoustics to produce systems that approach the standards of array processors developed in the United States (which are restricted by export controls). In addition, Keli is building a factory—with partial funding from the State Planning Commission—to produce electronic typewriters, scanners for reading Chinese characters, and high-resolution color monitors; and it is engaged in R&D on low-cost videophone technology in conjunction with British and Japanese interests.

In this latter effort, Keli exemplifies the new China's international aspirations. Many of the CAS firms incorporate ties with foreign businesses, as a means of expanding their financial backing, tapping international markets, and gaining access to foreign technology. The Institute of Zoology is engaged in a joint venture with a Hong Kong firm for the production of pesticides, and the Institute of Chemistry is working with a Thai firm to produce synthetic fibers. In the area of new materials, the San Huan Company (linked to the Institute of Physics, a center of research on rare-earth magnetic materials and rare-earth doped alloys) is cooperating with U.S. and Hong Kong investors in the establishment of a major new factory in Tianjin to produce magnetic materials for export.

Another CAS firm, Kejian, has a joint venture with the Massachusetts company Analogic for the production of phased array sector scanning systems used for clinical imaging in medical diagnoses. This has involved the transfer of some technology to China, joint research in Massachusetts, and production at a new facility in the Shekou special economic zone. Reportedly, the cost/performance ratio of this system is superior to anything on the market and has forced the company's Japanese rivals to cut prices in order to compete. Kejian is cooperating with the same firm in the production of a magnetic resonance imager. In this

effort, Analogic supplies the electronics, Kejian supplies the magnets, and software development and systems engineering are done jointly. Through such arrangements, foreign partners benefit from China's relatively low production and labor costs, as well as its expertise in certain specialized areas such as magnet production.

Through inattentiveness, the U.S. could easily forfeit opportunities to foreign competitors that are more attuned to the PRC's aspirations.

The rise of entrepreneurship

The current reform environment has permitted enterprising Chinese to establish a variety of new firms outside the state sector. Though typically small, these *min ban* (nongovernmental) businesses number about 10,000. Many of them are technology-based, having been started by scientists and engineers who became disaffected with work in the classical socialist institutions. A large number of technology firms are represented by the newly organized national Non-Governmental Science and Technology Entrepreneurs Association.

The best known, and arguably the largest and most successful, of these *min ban* companies is the Beijing-based Stone (*Si Tong*) Corporation. Stone was started four years ago by Wan Runnan, a young software specialist at the Computer Center of CAS. With a loan of $5,400 from local authorities in the Beijing suburbs in 1984, Wan and his colleagues built a corporation with total assets as of early 1988 of some $8 million. Stone now consists of 10 companies involved in computer technology and networks, office automation, electronic devices and components, printing, technology service centers, and electronics shops. It employs several hundred people in Beijing and has a national sales and service network.

Stone's initial success came from selling Japanese-made printers customized for use with Chinese-character software. This reliance on imported hardware has continued with the introduction of the first major product Stone has designed from scratch, the MS 2400 series of multiscript electronic typewriters. The hardware for these machines—specified by Stone—is made in Japan by Mitsui and imported to China. Stone then adds software, encoded on chips, at a modest but well-run new assembly plant near Beijing's Summer Palace. The company expects to introduce an advanced PC tailored to the Chinese market in the near future.

Stone has been a test case for the future of China's commercialization of high technology. It has achieved conspicuous success outside the state economy. It combines risk taking, technology, and marketing in ways the state enterprises have yet to pursue. And it relies on the sale of imported hardware in a country where foreign exchange is hard to come by and tightly controlled. As a result, it has been the object of controversy and official inquiry. To many Chinese, it is simply a *dao ye*—loosely, a racket. But to a growing number of forward-looking government leaders, Stone is a symbol of what technical entrepreneurship can do for China. It received official state sanction early last year.

In May of this year, the Zhongguancun area of Beijing, the home of many of the new CAS and non-CAS companies, was designated a special economic zone. It will enjoy preferential policies for the development of high technology industries.

Implications for the United States

As demonstrated by the new push toward commercialization and international linkages, and by the introduction of well-funded national projects guided by the country's best scientists and engineers, Chinese science and technology are undergoing a major transformation. It is becoming increasingly imprudent to assume that the heavy hand of Soviet-inspired socialist practices will continue to place a limit on China's technical development. More and more, China appears likely to emerge as an important force in selected areas of science and technology before the end of the century.

Such a China will be an increasingly attractive partner, both for trade and for scientific cooperation. But in order for the United States to benefit, it will have to redesign its strategies to keep up with China's new directions. Although there are a number of imme-

diate issues affecting cooperation that must be addressed—such as the United States' concern over the protection of its intellectual property—the greatest need is for longer-term thinking. Our reassessments should include at least the following considerations:

1. Institutional asymmetry

In order for S&T cooperation to succeed, both parties must adjust to the asymmetries between their S&T institutions. As current disagreements with Japan over questions of "symmetrical access" to research facilities illustrate, national institutional differences can cause friction.

Since the late 1970s, the United States and China have made serious efforts to compensate for such disparities. Because control over science and technology in China has traditionally been centralized in Beijing, the U.S. government has largely restricted its S&T relations with China to agreements between national agencies. The Chinese government, meanwhile, has delegated much more decisionmaking power to local authorities, partly to increase opportunities for contact with the decentralized research system of the United States.

These recent changes in China's S&T institutions have made further adjustments necessary. In the first place, the devolution of power to local authorities can create as many problems for the United States as it solves. It means that relations with central authorities in Beijing carry less of a guarantee that programs will go smoothly, and that U.S. companies and agencies may have to look elsewhere to find the most suitable cooperators. Moreover, the gradual strengthening of research activities in Chinese universities might make it more desirable to approach these institutions directly instead of through CAS or the Education Commission.

The growing commercialization of R&D creates additional challenges. Many of China's new commercial activities would not normally fall within the purview of the U.S.-PRC government-to-government program or of the agreements established between American and Chinese academic institutions. And American businesses that might benefit from cooperation with the new companies are unlikely to find out about them on their own; in general, U.S. firms active in China have been more interested in selling products than in acquiring partners for technology development, and they tend to know little about the Chinese R&D system. Many of these problems could be addressed through closer communication between U.S. government, academia, and business. Joint conferences and personnel exchanges would help to ensure that each sector keeps the others abreast of developments that affect them.

2. Information

The same information-flow problems that affect our ability to adjust to China's new institutional forms constrain our S&T relations with China in general. We suffer from a kind of "blind man and elephant" syndrome, where some U.S. institutions have good exposure to one part of the Chinese S&T establishment but where the analysis and integration of these diverse perspectives are lacking. Because there is no national consensus that China's scientific and technological development is a matter of vital U.S. interest, there are no systematic efforts to learn about it. Ironically, we tried harder in the days when China was still considered an enemy.

Any effort the U.S. government might make to enhance the collection and analysis of data should be undertaken with the needs of the private sector in mind. U.S. firms do some types of information gathering themselves, such as looking at market opportunities or studying activities in their own industry. But they rarely have the resources to examine relevant *scientific* activities. Because of the historical separation of research and production, these activities are often far more advanced than one would think from looking at industry alone. Nor are many firms likely to garner all the facts about China's ambitious new high-technology program. Government should therefore take up the slack by providing business with broad-range monitoring of developments in Chinese science and with reports on China's recent technology initiatives.

Significantly, there is no publicly accessible research center in either the U.S. government or academia devoted to comprehensive studies of Chinese S&T development. Nor are there centers to train individuals in the skills the United States will need in its future S&T relations with China. Current academic programs offer training in Chinese political and economic systems and management methods. But because they fail to recognize the importance of S&T in

Chinese modernization, this area is neglected. Such was also the case with Japanese S&T. Fifteen years ago, when the establishment of research and training centers might have helped us prepare for the Japanese challenge, no one was interested. Now, of course, there are many university programs dealing with Japanese S&T, but these must constantly strain to remain current. Rather than develop information capabilities reactively in the 1990s, we should employ an anticipatory strategy today.

3. Trade promotion

To take full advantage of China's growing commercial markets for high-tech products, the United States needs to explore more effective means of linking S&T cooperation with trade promotion. Present U.S. efforts in this area are hampered by an institutional gulf between our scientific and commercial agreements with China: S&T cooperation is handled by the State Department, trade promotion by the Commerce Department. While conscientious officials in both bureaucracies try to keep in touch, there is no structural guarantee that they will. The fact remains that our considerable S&T resources are not being used as fully as they might to advance U.S. commercial interests.

The Chinese are impressed by our scientific capabilities and eagerly seek out relationships with U.S. research institutions. With better coordination between S&T and trade promotion, we could steer these same Chinese toward our products and technologies as effectively as many European countries and Japan do in their dealings with China. (West Germany, for example, accomplishes this through its Ministry of Research and Technology.) In fact, the absence of a U.S. agency that links scientific and commercial concerns in an interna-

China Looks West for Appliance Technology

by Richard F. Topping

Recent economic reforms and the implementation of a massive modernization program in China—the goal of the Seventh Five-Year Plan for 1986-1990 is to increase both agricultural and industrial production by 6.7 percent annually—have created significant opportunities for U.S. businesses. In an effort to create a presence in international markets and improve its economy and quality of life, China is seeking partnerships with U.S. companies that can help build necessary capabilities in technology, product design, manufacturing, marketing, and distribution. In return, U.S. partners stand to benefit as China emerges as a powerful global industrial force in the next several decades.

The appliance industry, in particular, is ripe with opportunities. Over the past 10 years, the Chinese have steadily improved it by purchasing product designs and turn-key production equipment from foreign nations, particularly Japan. The current plan calls for further improvement in production and modernization of appliances for export to foreign nations, as well as for distribution within China. Specific goals include increases in television set production by 22 percent and in washing machines by 36 percent. Refrigerator production is expected to see a five-fold increase.

Currently, most Chinese appliances are not designed to appeal to foreign consumer tastes and still lack the "fit and finish" quality demanded by U.S. consumers. Unacceptable differences in size, features, and colors are some of the factors that limit Chinese appliances from entering export markets. For example, the Chinese are fond of large, free-standing fans with timers and other control features—an appliance that has virtually no demand in the U.S. market because of air conditioning.

Larger appliances in general will take longer to compete with Western goods, and some may never do so. U.S.-produced washing machines and full-size refrigerators, for example, are durable, well marketed, and firmly entrenched. In addition, the costs of freighting and shipping equivalent appliances from China could far outweigh the labor savings.

Still, importation of U.S. design and production assistance could enable the Chinese to market selected appliances to Western markets within the next 3 to 5 years. Small no-frost refrigerators that are becom-

ing popular in China may appeal to the small-apartment and dormitory markets. In addition, universal electric housewares such as desk fans, vacuums, and hair dryers may penetrate the U.S. market very soon.

In considering a partnership with a Chinese appliance manufacturer, U.S. decisionmakers must first realize that a relationship will not generate immediate profits and may take a significant investment of time, personnel, and funds. But the long-term potential is substantial. It is important to note that the Japanese were in a similar state 30 years ago and have since become one of the world's leading exporters. The sheer size of the Chinese economy, coupled with new technology, low labor costs, and an untapped internal market, suggest that China could become a major world appliance producer in even less time than it took the Japanese.

At this early stage, U.S. appliance manufacturers can form strong bonds with their Chinese counterparts by helping them improve quality and gain access to Western markets through established brand names, distribution channels, and sales networks. Since most Chinese executives and managers have technical backgrounds, they generally have limited experience with marketing and sales. The "teacher/student" relationship is now crucial to the Chinese, but this association also could be extremely beneficial to U.S. partners in the future when China becomes a dominant economic force.

Experience has shown that Chinese business relationships are based on close personal friendships and mutual trust. Although these take time and patience to develop, they can be the basis of long-lasting, successful ventures. The advantage of early participation is the attainment of the "first-son"-like status on which the Chinese base so much of their culture. They have been known to favor early entrants with preferred treatment in much the same way that the first-born son in a Chinese family has traditionally held a special place.

Companies with the patience and resources to develop a long-term position in the Chinese appliance industry should begin investigating cooperative arrangements now. Drawing on the experience of other industries, U.S. companies should start with a modest investment, learn to work cooperatively with their Chinese counterparts, and allow time to build the relationship gradually.

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tional context may be one of the best arguments for once again considering the establishment of a Department of Science and Technology.

4. Funding

Considering the enormous potential for future returns on our investment in China, the level of resources we have committed to S&T cooperation seems remarkably low. According to one estimate, the United States has spent only $10 million to $20 million annually during the past few years on its government-to-government programs with China. Under the agreement signed by our two countries in 1979, such funding follows the principle of reciprocal cost sharing: if a scientific delegation is sent from one country to the other, or if a joint research project is set up in one of the countries, the sending side pays the international travel costs, and the receiving side pays the in-country costs. This formula has served a useful purpose. But because the Chinese government is so much poorer than our own, certain activities that might serve U.S. interests—such as setting up training programs in China—have to be forgone.

Moreover, the funding restrictions imposed on individual U.S. agencies encourages them to consider only the short-term benefits of cooperation with China. At the time our joint S&T activities began, China did not qualify for Agency for International Development (AID) programs. As a result, U.S. agencies have had to finance programs with China out of their normal budgets. They have been forced to shy away from activities that do not promise clear scientific and technical benefits to the United States or that do not support their domestic mission.

Transportation, for example, is an area of profound importance to Chinese modernization—and of

great potential for U.S. commercial sales. Yet in considering cooperative ventures, the U.S. Department of Transportation takes into account only the benefits that would accrue to itself. From this narrow perspective, China would appear to get most of the benefits. DOT has therefore been hard-pressed to justify the use of its budget for China-related matters.

Our support for Chinese S&T development has not been uniformly meager; we pay some 80 percent of the cost of educating Chinese students in the United States. Yet when U.S. efforts are compared with the activities of Japan and Europe, the funding formula to which we have been wedded seems overly rigid. In general, these countries view S&T relations with China as a sound national investment that in the long run will provide access both to good intellectual talent and to lucrative commercial markets. With special budgets for international cooperation, they can pursue targets of opportunity that U.S. agencies cannot: West Germany, for instance, is helping to support a major cell biology laboratory in Shanghai, and France is contributing to a new center for robotics in Shenyang.

In addition, the absence of concessionary financing for commercial activities places U.S. companies at a serious disadvantage. Japanese and European firms can obtain financing that enables them to offer China soft loans with which to buy their products. Because the Chinese are short of hard currency, access to attractive financing often determines whether a sale is made or not. Under the Reagan administration, however, such financing has not been readily available to American business.

Given the current U.S. budget deficit, this situation is not likely to improve any time soon. And while an AID program for China is now technically possible, the political climate in Congress is not favorable. Nevertheless, it ought to be possible for the United States to adopt a sense of enlightened self-interest in funding programs with China. We should start thinking about our support for China's technical development more explicitly in investment terms, based on expectations of future scientific and technological returns and precommercial benefits. In particular, the time may have come for establishing a Sino-American Foundation for S&T Cooperation—funded by U.S. government and business, perhaps with Chinese contributions—to support the kinds of efforts that now fall between the cracks.

5. Multilateralism

China is increasingly forging technological relations with other Asian countries with which the United States also has close ties. The more this happens, the more it is in the interests of U.S. business and government to consider their relations with the PRC in a larger, multilateral context. For businesses, this may mean integrating China into the rest of their Pacific Basin operations. Multinational corporations are finding that for certain types of products it is not always feasible to centralize R&D and other services back home. China is ideally situated for servicing U.S. firms' other Asian markets—say, by writing software and customizing or maintaining equipment.

The U.S. government, too, needs to start thinking multilaterally. Of late, there has been intense interest in government/government S&T relations with Japan, a bilateral relationship clearly of great importance. But as more and more countries in the region identify common interests and enter into scientific agreements, our preoccupation with bilateralism is beginning to appear shortsighted.

The United States should also consider ways to integrate China into its multilateral S&T relations with less developed countries. China continues to think of itself as part of the Third World and actively supports such international S&T development efforts as the Third World Academy of Sciences. The United States might therefore work with China to turn one or more of that country's research establishments into an international center of excellence that would bring scientists from developed and less developed nations into regular contact.

Conflicting trends

Whatever adjustments the United States makes in its S&T strategies, there is likely to be conflict between the need to protect our interests in China and issues of competitiveness and national security. On the one hand, new Chinese leadership and initiatives are increasing the possibilities for mutually beneficial scientific cooperation and trade agreements. And the strong European and Japanese presence in China means that we will have to redouble our efforts there if we want to retain an edge.

On the other hand, our international S&T relations as a whole are coming under increasing government scrutiny. In negotiations for the renewal of the

S&T agreement with Japan, the Reagan administration has put great pressure on the Japanese to make their research system more accessible to Americans, thereby equalizing the flow of benefits from our S&T relations. In Congress, meanwhile, legislation has been introduced that would give the Defense Department veto power over partnership agreements.

Thus, it is possible that concerns over competitiveness and national security will lead the government to question an S&T relationship from which China appears to receive most of the benefits. Instead of bringing the two countries closer together, S&T could become a source of friction. To prevent this from happening, we should focus our attention on the long-term benefits that our investment in China's technical development can provide. More important, we should take steps now to ensure that the full potential of our relationship with China will be realized in the years to come.

Recommended reading

Toufiq A. Siddiqi, Jin Xiaoming, and Shi Minghao, "Joint Study of U.S.-China Government S&P Protocols," *China Exchange News* 16, no. 1 (March 1988).

Richard P. Suttmeier, "Academic Exchanges: Values and Expectations in Science and Engineering," in *Educational Exchanges: Essays on the Sino-American Experience*, Joyce K. Kallgren and Denis Fred Simon (eds.). Berkeley, Calif.: Institute of East Asian Studies, University of California, Berkeley, RPPS 21, 1987.

Richard P. Suttmeier, "Overview: Science and Technology Under Reform," *China's Economy Looks Towards the Year 2000*, Vol. 2. Joint Economic Committee, U.S. Congress. Washington, D.C.: U.S. Government Printing Office, 1986.

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Happier Times. *UC-Irvine engineer Tien Chang Lin with Deng Xiaoping in 1984.*

U.S.-Chinese Scientists See Dreams Imperiled

A network of Chinese-American scientists has been nurturing China's best and brightest, but their efforts are now in jeopardy

As U.S. SCIENTISTS sit in their living rooms watching scenes of mayhem play across their TV screens, it may not occur to many that the fearsome images being broadcast out of China's major cities could have a direct bearing on their scientific colleagues in the United States. But over the past decade or so, scores of world-class U.S. scientists of Chinese descent have established close ties with scientists and science students in China.

It was under Deng Xiaoping's liberalization policies in the early 1980s that scientific collaboration blossomed between scientists in the two countries. Many Chinese-American scientists, in particular, have been hoping that China would emerge from its period of intellectual darkness and, with an infusion of foreign help, become a major, and positive, force in the world—especially in international science.

But suddenly the brutal government repression of student demonstrators has once again darkened the future of intellectuals in China. According to reports at press time, troops have moved onto several campuses in Beijing, including Beijing University, which is considered to be one of China's most prestigious academic institutions.

If such turmoil continues, it will do more than provoke outrage among Chinese-American scientists, it will throw into question the future of many collaborative projects that have been painstakingly set up in China and the United States. The impetus for these scientific links has come from a most remarkable network of Chinese-American researchers who have made a point of nurturing science in their motherland in numerous ways. In interviews with *Science*, many of them have expressed helplessness and frustration that the government may be about to crush what they have tried so hard to cultivate: bright, young students to propel China and its billion people forward toward modernization.

Leland Chung, a urologist at M. D. Anderson Hospital and president of the 1000-member Society of Chinese Bioscientists in America, expressed a typical reaction. He said he is faxing a personal letter to China's top leaders, colleagues, and whomever he can reach. "As an educator and a Chinese-American, I have wanted so much and for so long to see China finally take the correct course of action to modernize and improve the country's future. This dream of mine was shattered by the current leadership in China. We can no longer tolerate this senseless killing of the very students that we tried so hard to educate. It is time that we all work together to bring this bloody and shameful action of the Chinese government to a halt immediately."

The list of Chinese-Americans involved in forging scientific links between the two countries reads like a Who's Who in International Science. In addition to Chung, they include Yang Chen Ning and T. D. (Tsung-dao) Lee, who shared the Nobel Prize for physics in 1957; Yuan Lee, who won the Nobel for chemistry in 1986; superconductivity star Paul Chu; Chern Shiing-Shen, former dean of the math department at the University of California at Berkeley; Ernest Kuh, former dean of engineering at UC-Berkeley; Tien Chang Lin, executive vice-chancellor of the University of California at Irvine; Alice Huang, president of the American Society of Microbiologists; and others.

In what follows, *Science* provides sketches of some of the key players in this network, the projects that bind them to scientists in China, and their reaction to the military crackdown.

In the Chinese-American community, no researcher is regarded as more energetic and successful in furthering Chinese-American science ties than physicist Yang Chen Ning Yang, a professor at the State University of New York at Stony Brook, most recently used his clout to raise $1 million from Hong Kong benefactors to construct a new research institute at Zhongshan University in

Chinese Scholars in the United States
Number of visas issued by the State Department each fiscal year. Visas can be for more than one year. The Immigration and Naturalization Service says that there were 41,192 students from China in the U.S. in the middle of March.
Exchange students and visiting scholars
Students
15,000
10,000
5,000
0
79
80
81
82
83
84
85
86
87
88
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Guangzhou (Canton). The institute, which was dedicated in December, is devoted to research in theoretical physics, mathematics, anthropology, and linguistics. (The fields were selected in part because they do not require expensive laboratory equipment.)

For Yang, who came to the United States in 1945, the institute is the realization of a 6-year dream. It represents the latest project in a long effort he has waged to help invigorate science in China and cultivate rapprochement between the two countries. Yang, who won the Nobel with Lee for work in "parity laws" that led to important discoveries in elementary physics, told *Science* that after President Nixon opened the doors to China in 1971, he was one the first prominent Chinese-American scholars to visit his native country. Since then, "as a person with roots in both countries, I felt I had to increase understanding" between China and the United States.

That took no small amount of courage in the 1970s when Taiwan was zealously opposed to the warming of relations between the United States and China. Yang said he and his family received threatening letters from Taiwanese students. He said they "were careful" when they received packages, fearful that they contained bombs.

But he continued his activities. In addition to spearheading the drive to create the Zhongshan institute, he also raised $1 million for an exchange program at Stony Brook for Chinese and American scholars, which is now in its seventh year. So far, about 90 scholars from a wide range of fields have studied at Stony Brook for an average stay of about 1 year each.

Yang, who was interviewed before the killings by government troops, could not be reached at press time for reaction after the attacks.

Mathematician Chern Shiing-Shen, 78, who is professor emeritus at Berkeley, has been instrumental in keeping China and Taiwan up to speed in his discipline by establishing leading math institutes in both countries. In 1946, 3 years before the Communists took over the mainland, Chern founded the math institute of the Chinese Academy of Sciences in Beijing. He maintained collaboration with members of the institute after they fled to Taiwan during the Communist takeover of the mainland and reestablished the organization there in Taipei.

In 1984, Chern founded another Chinese math institute, this one at Nankai University, his alma mater. He said in an interview, "My concern is to get young people started." The institute now has about ten researchers and, if it survives the current period, it will eventually have up to 30. According to Chern, it is better equipped than most, if not all, other math institutes in China, including the Academy of Sciences in Beijing.

Like Chern, Nobel laureate and chemist Yuan Lee, a native of Taiwan, has established links with research institutes in both Taiwan and China. In Taiwan, he advises two research institutes, helps to raise funds, and recruits scientists there. In China, he provides technical advice to two research institutes and is an honorary professor at several universities. Lee says that he tries to help as many countries as he can, regardless of origin, but China and Taiwan are a special concern.

Tien Chang Lin, UC-Irvine official and engineer, has been influential in shaping educational policy in China, often advising presidents of Chinese universities and officials from the government education ministry. In the past, he has also met with Deng and other top Chinese leaders to discuss educational reforms. Responding to the repression, Tien remarked, "It is very tragic for people like Deng, who have done so much to liberalize the system, to take such a backward measure." Lin called on American scientists to support the U.S. government's suspension of military weapons sales to China and said that "they should make it clear to the Chinese that they've got to change to more freedom and democracy."

Superconductivity pioneer Paul Chu of the University of Houston echoes these sentiments. Asked for his reaction to the killings in Beijing, he said, "I'm extremely mad and sad. It is unbelievable—especially the announcement by the government that the actions against the demonstrators were a victory over counterrevolutionaries. It's a big lie." Chu, who was born in China and grew up in Taiwan, says that he had been "extensively" collaborating with scientists from both nations before his "work heated up." Recently, though, he has been too busy to maintain the pace of cooperation, limiting his activities to working with the Chinese in his laboratory.

Chinese-American scientists are mostly linked to each other through informal, old-boy networks. But 3 years ago the Society of Chinese Bioscientists in America was formed, in part, to encourage more extensive ties. In a way, it functions like any other scientific society, holding scientific symposia, publishing the proceedings, and issuing a newsletter listing job openings and meeting notices. But this year, it began a new program to sponsor Chinese students (14) for training in the United States. Its ethnic focus has obviously struck a chord among many Chinese-American scientists; membership has quadrupled since its first year.

Since its inception, the society has been very careful to avoid political matters, especially with regard to relations between Taiwan and China. But the society's president, Leland Chung of M. D. Anderson, says that he will press the membership to make a political statement in response to the repression. He said that in his personal opinion, "I want to see Americans take the strongest action possible. We should cease dealing with China altogether." They are strong words for a man who has been promoting scientific collaboration between the United States and China. But they evince the depth of concern among this band of world-class Chinese-American scientists that if they do not speak out, the period of collaboration could be over. ■ MARJORIE SUN

Chern Shiing-Shen *of UC-Berkeley has established math institutes in China.*

Paul Chu: *the superconductivity hotshot calls government statements "lies."*

News & Comment Science, Vol. 245

Soul-Searching After China Crackdown

U.S. scientists are having to make difficult decisions about maintaining scientific cooperation with China in the face of evidence that repression there is continuing

TWO MONTHS after military tanks rolled into Tiananmen Square, U.S. research institutions and scholars are still soul-searching over how to best respond to the continuing repression against intellectuals in China.

The Chinese authorities would like Americans to behave as if nothing happened. At last month's International Geological Congress in Washington, D.C., they made sure that their delegation was even bigger than announced before the clash of army and protesters. Whereas 56 scientists from China had originally been signed up for the conference, 100 showed up, according to the meeting's general secretary Bruce Hanshaw.

The Chinese government has been enthusiastically urging U.S. researchers to continue to travel to China to maintain cooperative links. This has presented U.S. organizations—and individual scientists—with a torturous dilemma: do they visit China as if nothing happened or do they stay home even if the decision further isolates Chinese scholars already oppressed by their government? Although their numbers are relatively small—some one thousand U.S. scientists visit China each year—their decision will have symbolic importance.

The response has been mixed. Many meetings scheduled to be held in China this summer and fall have been canceled, some for practical reasons because martial law is still in effect, others as a show of protest. Merle Goldman of Boston University, a scholar of Chinese intellectual society, favors going even farther. Goldman says that major U.S. research organizations should stop sending official delegations to China because "nothing is more important to Deng Xiaoping [China's senior leader] than science and technology. Unless we deprive the Chinese leaders of scientists, they won't respond to the criticism of what they did."

The U.S. National Academy of Sciences has taken the toughest stand among the major groups engaged in joint programs with China. Immediately after the killings at Tiananmen Square, Academy president Frank Press announced the suspension of all its activities with China and sent a cable to several scientific institutions in China to express "outrage and sadness"—a cable to which he has received no personal response

> ***"Unless we deprive the Chinese . . . of scientists, they won't respond to [our] criticism."***
>
> —Merle Goldman

from Zhou Guang Zhao, president of the Chinese Academy of Sciences and a foreign associate of the U.S. Academy.

More recently the U.S. Academy's position has softened somewhat, and it now "welcomes" Chinese scholars to visit the United States as long as they are legitimate researchers, said Robert Geyer, of the Committee on Scholarly Communications with the People's Republic of China, which is sponsored in part by the Academy.

American sociologists also are expected to debate whether to suspend research in China at the annual meeting of the American Sociological Association in San Francisco 9 to 13 August. Thomas Gold of the University of California at Berkeley, a China specialist, favors halting U.S. sociological research in China for the next 6 months for practical reasons. Gold argues that it would be pointless to conduct research now because the Chinese will be increasingly suspicious of people asking them questions. "Now they have reason to believe that there is a right and wrong answer."

Gold contends that associating with foreigners could be "poisonous" for Chinese colleagues now, since Chinese hardliners "hate non-Marxist social sciences." The government "would love an opportunity to shut down sociology," he says.

But for every view that the U.S. scientific community should stand at arms' length from China for the present, there are scientists and scientific organizations that are advocating the opposite tack. Nobel laureate and physicist Yang Chen Ning of the State University of New York at Stony Brook, who has long nurtured relations with Chinese scientists and institutions, said, "It is absolutely essential for the United States to keep traffic and intercourse with China going as much as possible." Reached by telephone in Hong Kong, where he has worked this summer, Yang said, "The best policy is to try to maintain scholarly exchanges as before. It is extremely important. It will benefit both countries."

Yang supports the Bush Administration sanctions, which halted visits of U.S. and Chinese military leaders, stopped bilateral discussions among high-level government officials, and suspended several arms deals. But, he says, "if the United States imposes sanctions that are too strong, there is a danger that China will close its doors and the United States will have no influence on Chinese policies. That would be a disaster."

One major private institution that is maintaining its collaboration with China is the Ford Foundation. Sponsor of a $5-million China program, the Ford Foundation will continue its exchange programs, which focus on economics, international relations, and rural development. This fall, it plans to sponsor eight U.S. scholars to teach economics in China, and about 125 Chinese scholars to travel abroad. Foundation representative Peter Geithner said in a telephone interview from Beijing, "It's important to maintain contacts and help those not responsible for what happened."

The National Science Foundation, another major sponsor of U.S.–China research collaboration, is also continuing its cooperative program. "We are part of the government, so we have to be consistent with government policy," says Alice Hogan, NSF's senior China program manager.

But, she adds, the program is "in a state of suspended animation." Following the 4 June crackdown, NSF stopped staff travel to China and is advising participants in its cooperative research program to postpone travel plans. As a disincentive, NSF has cut off grantees' travel funds for China visits.

This kind of fence-straddling is typical of many U.S. organizations. Geyer, acting director of the China committee, expresses the dilemma common to many when he says: "I, among others, am struggling to come up with an appropriate response" regarding U.S. scholars' visits to China. In the case of his own organization, his sponsors, which include the Academy as well as the American

Stories of Repression from China

Last weekend in Chicago, when leading Chinese student dissident Wu'er Kaixi stood before hundreds of fellow students to rally them to keep the pro-democracy movement alive abroad, an older man was near the podium as well. He was Wan Runnan, an engineer and entrepreneur who founded a company that was China's main hope in entering the modern computer world.

Now Wan, 42, who was general manager of the Stone Group, a Beijing company known as China's IBM, and who helped bankroll the student demonstrations in Beijing this spring, must start over. His is one of many whose lives have been torn asunder by the crackdown on Chinese scientists, engineers, and other intellectuals.

The oppression continues in China. Fang Lizhi, the astrophysicist, and his wife, physicist Li Shuxian, are effectively in exile in their own country, having taken refuge at the U.S. embassy in Beijing. Reports of arrests of scientists continue to filter out, although the Chinese government has cut back on publicly announcing them. As many as 10,000 people have been arrested in China since the massacre at Tiananmen Square, according to Western media. Among the scientists and researchers arrested, Asia Watch reports, are Yang Wei, a graduate student in biology at the University of Arizona; Yang Fang, an engineering student from Hefei; Zhuo Duo, an economist at Stone Group; Liu Fuan, a student at Beijing Medical University; Bai Nansheng, deputy director of the Agricultural Development Research Institute; Yu Fangqiang, a student at Beijing Science and Engineering University; and two students from Shanghai University of Science and Technology, Wang Hongming and Song Mitu.

Dissident Yan Jiaqi.

The Chinese government is engaging in more subtle forms of repression, too. An American source from Beijing told *Science* that researchers at educational institutions in the city have been forced to study speeches by Deng Xiaoping, China's top leader, and other political documents—a common practice for bringing those who have strayed from "correct thinking." As part of a directive by China's State Education Council, university students this month must take part in "ideological reeducation" on campuses, according to a staff aide to the U.S.–based Committee on Scholarly Communication with the People's Republic of China, sponsored in part by the National Academy of Sciences.

The crackdown has made life even worse for students and scientists than before. They are already among the most poorly paid in Chinese society and their working and living conditions are generally miserable. Intellectuals are the only class that has not benefited from economic reforms in China, says Huang Yuan-geng, a graduate of Shanghai's Jiaotong University and a doctoral candidate in computer science at the University of Maryland.

Here in the United States, students and scholars report that they have been photographed and videotaped by Chinese authorities. They also assert that Chinese consulate staff are making harassing phone calls to them. Chen Bao Sheng, science counselor at the Chinese embassy in Washington, D.C., denied that any of the consulates in the United States have engaged in such activity. "There are rumors that we have followed students and made records" of their activity. "We have never done that. We have never made calls," Chen said.

Chinese students who have openly opposed the Deng regime say they fear retribution if they return to China. Consequently, they are lobbying Congress hard to change their visa status so that they can stay longer in the United States and also work to support themselves. According to an engineering publication, *The Institute*, some high-technology companies would like to hire Chinese students, but are reluctant to do so because of their uncertain immigration status.

"If we are forced to go back, many of us—including myself—face imprisonment or worse," said Zhongdang Pan at last weekend's Chicago meeting of Chinese students. Pan, an organizer of the meeting, is a doctoral candidate at the University of Wisconsin at Madison. Indeed, students were warned at the meeting by Yan Jiaqi, a close adviser to deposed Chinese leader Zhao Ziyang and head of the Institute of Political Science in Beijing, to postpone their return to China. ■ M.S.

With reporting from Iris Chang in Chicago.

Council of Learned Societies and the Social Science Research Council, are split about how to proceed. The Council has decided it will fund eight U.S. researchers in the humanities and social sciences to study in China as planned by the committee before the crackdown began. But the scholars will study in China under the auspices of the American Council of Learned Societies, not the Academy. To make matters even more murky, the China committee has suspended plans to sponsor about 16 graduate students who had intended to study in China this fall.

Physicist Joseph Birman of the City College of New York, believes that striking a middle ground makes sense. He advocates maintaining exchanges, but taking every opportunity to condemn China's actions, especially when U.S. scientists meet high-level Chinese officials. Birman, who founded a program that has brought 50 Chinese physicists to study in the United States in the past several years, says, "We should differentiate between the authorities, who supported massacres and roundups, and students and scholars. We should operate with a scalpel and not a meat cleaver." He adds that when Chinese officials call the crackdown " 'an incident,' I say, 'No, it was a massacre.' We have to make noise as publicly as we can."

Birman draws a parallel between the circumstances in China and the past plight of Soviet physicist Andrei Sakharov and *refuseniks*. "During the Brezhnev era, we continued to travel to the Soviet Union. At the same time, we visited *refuseniks* openly and insisted on meeting with top Soviet academy officials and we condemned their treatment of scientists. I think it was helpful." Birman said regarding China, "If one only maintains business as usual, that wouldn't be right."

Geyer plans to visit Beijing this month to assess the situation there. For the Academy to resume normal relations with China, he says, "there would have to be a clear indication that the executions and arrests of intellectuals have stopped and an environment conducive to meaningful collaboration has been restored." He adds, "We'll be groping our way" to measure those changes.

■ MARJORIE SUN

New York Times, June 28, 1989

Scholar Exchanges Jolted by Tremors in Beijing

By JOSEPH BERGER

One casualty of the turmoil in China may be the scholarly and scientific collaboration that has enriched knowledge in the United States and China, opening up the geologic wonders of Tibet and the workings of the Chinese Communist Party for Americans while helping the Chinese fight off a potent crop disease.

The crackdown in China against pro-democracy demonstrators and the tensions in Chinese-American relations that have followed have deterred many American scholars from venturing to China and prevented many Chinese scholars from venturing out of their country. Even if travel continues unabated, Chinese scholars and officials may be less willing to talk freely in the less tolerant atmosphere now prevailing in their country.

The National Academy of Sciences has suspended its three major exchange programs with China to protest the use of Chinese troops against demonstrators in Tiananmen Square. The suspension affects about 200 American and Chinese scholars.

The academy has urged 30 American scholars in China under its sponsorship to come home. It also postponed a symposium in Shanghai on gene research that would have had 15 American speakers and 200 participants from all over China.

Exchanges in Doubt

Several other academy exchanges are also in doubt: a visiting scholars exchange program, for example, that annually sends 35 Americans to China and 30 Chinese to the United States for one to three months, and conferences on Chinese religion and philosophy, which would have brought 15 Chinese scholars to the United States in September.

Hundreds of other scholars travel on their own with university or private sponsorship, and many of these

The New York Times/Harry Katz

Tsao Hu, left, a visiting scholar from China, and Dr. Dean H. Hamer, a research scientist, conferring on an experiment at the National Institutes of Health. The turmoil in China has threatened scientific and scholarly collaboration.

Fears grow that a freeze will result in a cutoff of ties.

have also had to change their plans.

"Everybody who is involved in the exchanges with China in academic work is very upset at the negative impact this will potentially have on both American access to China and Chinese access to America," said David M. Lampton, president of the National Committee on United States-China Relations.

Mr. Lampton is a political scientist who, in 1982, studied Chinese river planning and discovered that, despite China's totalitarian system, regulation of the environment is not well centralized, a shortcoming that has resulted in polluted water supplies and wasted arable land. Such a study would not have been carried out, he suggested, had not Chinese officials been open and candid with him.

Though its numbers are uncertain, the exchange of scholars with China is the largest the United States has with any Communist country, said Peggy Blumenthal, a vice president of the Institute for International Education, the largest international exchange program in the United States.

Fears About the Impact

"Chinese scholars have important contributions to make in scientific and other fields and for us to cut off communications with them hurts our own scholarship and slows down the rate of scholarship everywhere," she said.

In the last decade of information exchanges between scholars in the United States and China, American scientists have helped China protect its pepper and tobacco crops against a devastating virus and taught the Chinese how to build an advanced collider to study subatomic particles.

In turn, the Americans have learned about a Chinese drug that reportedly has been effective in destroying cells containing the AIDS virus, and a Chinese graduate student working in the United States discovered a new material that can be used in high-temperature superconductors. American social scientists have been able to scrutinize the workings of the Chinese Communist Party.

Now, there is fear that a freeze in American relations with China may cut effectively sever links between these two communities, by limiting the travels of American and Chinese scholars and by making Chinese academics reluctant to speak freely.

Science and scholarship thrive on exchanges of information unimpeded by national boundaries. Journal articles are one way of communicating, but face-to-face meetings of scholars, informally, at conferences or in laboratories, are as essential.

No Substitute for Contacts

"There is no substitute for getting together on an informal basis with colleagues doing the same kind of work you are doing," said Dr. Jules B. LaPidus, president of the Council of Graduate Schools, which represents 400 graduate schools.

Just as important as formal conferences, he said, is "what takes place in the hallways and restaurants where you find groups of people who don't usually see each other sit down and draw on the back of envelopes and write equations and talk about what actually happens in the laboratory and ask their colleagues, 'Have you tried this?' or 'Have you got any ideas about that?' "

One group for whom access to China and its officials is vital are the American historians, geologists, anthropologists and others who study China, said Kyna Rubin, a professional associate with the National Academy's Committee on Scholarly Communications With the People's Republic of China. American political scientists have even been allowed to examine Chinese government operations and economists have been studying the economic reforms.

"One would suspect that's not going to be as easy to examine as it was before June 4," she said. "For Americans trying to learn about China, to be denied access to China takes us back to the 1950's, 60's and 70's when you had to study China from afar rather than first-hand."

American scientists in China have been using the silkworm as a tool in genetic and other biological experiments. They have been studying erosion and the spread of deserts. "American geologists are crazy about Tibet" and its distinctive, often inaccessible geological formations, said Jane Liu Jernow, who directs the Committee on Scholarly Communication's science program.

Chinese land specialists are still scheduled to come here to study satellite data that track erosion.

All such research has been jeopardized by the current atmosphere in China that makes Chinese more reluctant to speak their minds.

There are no precise figures on how many people and programs will be affected, since hundreds of scholars come to the United States or travel to China on their own. China has not yet closed its doors to Americans. American universities are still urging Chinese colleagues who have trips scheduled for the coming academic year to show up on schedule.

Still, how readily China will let its scholars out of the country, and the willingness of those scholars to speak freely with Americans is in doubt.

American research may also be set back simply by the loss of visiting Chinese graduate students and postdoctoral fellows, who are often some of the most able researchers at many university graduate mathematics, physics and chemistry departments.

U.S. Workshops in China

In scientific exchanges, experts say, Americans have probably been teaching Chinese scientists far more than the Americans have learned from them. Scientific research in China was practically halted during the Cultural Revolution of 1966 to 1976 and China lost pace with the rest of the world. In recent years, Americans, taking their own equipment and chemical agents, have gone to China and run workshops on gene cloning and immunotoxins to acquaint the Chinese with newly developing areas of science.

Dr. Dean H. Hamer, a research scientist for the National Cancer Institute who arranged three such workshops in 1987 and 1988, said that Chinese scientists at the Institute of Microbiology in Beijing, using biological engineering techniques absorbed from the West, have produced an attenuated strain of a virus, the cucumber mosaic, that devastated crops. The new strain immunizes pepper, tobacco and some fruits against the virus. Thousands of acres of crops have been saved, Dr. Hamer said.

Americans have also capitalized on their contacts with China in experiments with drugs that might help fight AIDS and cancer.

Chou Wen-chung, a professor of musical composition at Columbia University, says the new atmosphere in China may impede the kind of cultural exchanges that brought the violinist Isaac Stern and the playwright Arthur Miller to China and enlightened American scholars about Chinese concepts and forms in music.

"The situation is rather tragic," he said, "because it was happening at a time when things are changing both for Chinese intellectuals and Western scholars."